Service-Informationen
Resistriernmmer 020-950
PAL/SECAM
Zweinormen-System

TOSHIBA

FARBFERNSEHEMPFANGER

163F5DZ

Das Modell 163F5DZ ist baugleich mit dem Modell 160F5WD bis auf die Gehäusefarbe. Benutzen Sie bitte diese Service Anleitung zusammen mit der Service Anleitung für das Modell 160F5WD (020-879).

Warnung: Vor Service-Arbeiten an diesem Chassis sind die untenstehenden Hinweise "Vorsichtsmaßnahmen hinsichtlich Rötgenstrahlung", "Sicherheits-Maßnahmen" und "Anmerkungen bezüglich Gerätesicherheit" zu lesen.

LISTE DER GEHÄUSE-ERSATZTEILE

Modell 163F5DZ

Stellen-bezeichnung	Teil-Nummer	Beschreibung
A201S	23417580	Gehäuse Vorderseite
A221	23874025	Ein-/Aus-Schalter
A242	23999510	Bedienungsklappe
A243	23848226	Riegel d. Bedienungsklappe
A401	23990080	Gehäuse Rückseite
A411	23995427	Typenschild, Modell Nr, B/C
A605	23874550	Knopf, TV21 Pin/Video SW
A701	23924449	Karton
A702	23934872	Untere Verpackung
A703	23934873	Obere Verpackung
A710	23995428	Aufkleber, Karton
B111	23848140	Netzkabel-Befestigung
Y101	23994138	Bedienungsanleitung
Y125	23124935	Teleskopantenne
Y145	23293988	Adapter f. Teleskopantenne

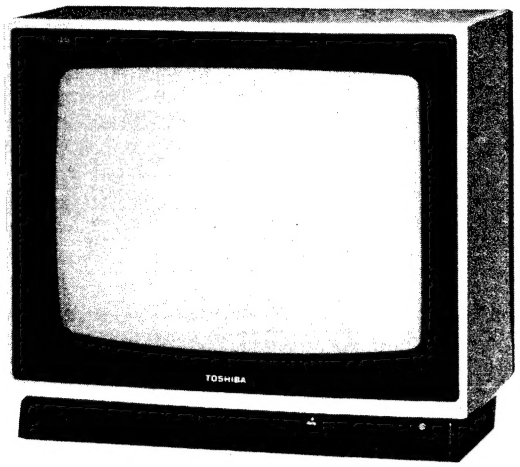
TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105, JAPAN

SERVICE DATA
FILE NO. 020-879
PAL / SECAM
DUAL SYSTEM

TOSHIBA

COLOUR TELEVISION

160F5WD



SPECIFICATIONS

Input Power Rating:	67 watts, 220 volts AC, 50Hz
Aerial Input Impedance:	75 ohm unbalanced type for VHF and UHF
Receiving Channels:	VHF channels ..... channels E2 to E4, E5 to E12 S1, S2 and S20
	UHF channels ..... channels 21 to 69
Intermediate Frequencies:	Picture 1-F carrier frequency 38.9MHz
	Sound 1-F carrier frequency 33.4MHz
	Color sub-carrier frequency 34.47MHz
Chassis Construction:	IC-Solid State Horizontal Chassis
Picture Tube:	16 in. A38EAC00X03, 382 mm (measured on diagonal of viewable picture area), 90° Deflection
Sound Output:	1.0 watt (at 10% harmonic distortion),Max. 1.5 watts
Speaker:	77 mm,Round
Aux.Terminal:	Earphone jack, 21 pin socket
Cabinet:	Table type
Dimension:	Height .....387 mm
	Width .....418 mm
	Depth .....403 mm
Weight (Net):	12.5 kg

Specifications are subject to change without notice.

Printed in Japan Mar, 1986 (So)

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION," "SAFETY PRECAUTION" AND THE "PRODUCT SAFETY NOTICE" INSTRUCTIONS BELOW.

X-RAY RADIATION PRECAUTION

1. The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-RAY radiation as result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 24.5kV at zero beam current (minimum brightness) operating at 220V a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 26.5kV. When checking the E.H.T., use the 'High Voltage Check' procedure on page 4 in this manual using an accurate E.H.T. voltmeter.
2. The only source of X-RAY radiation in this receiver is the C.R.T. To prevent X-RAY radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.
3. Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-RAY radiation.
   For continued safety, replacement component should only be made after referring the Product Safety Notice below.

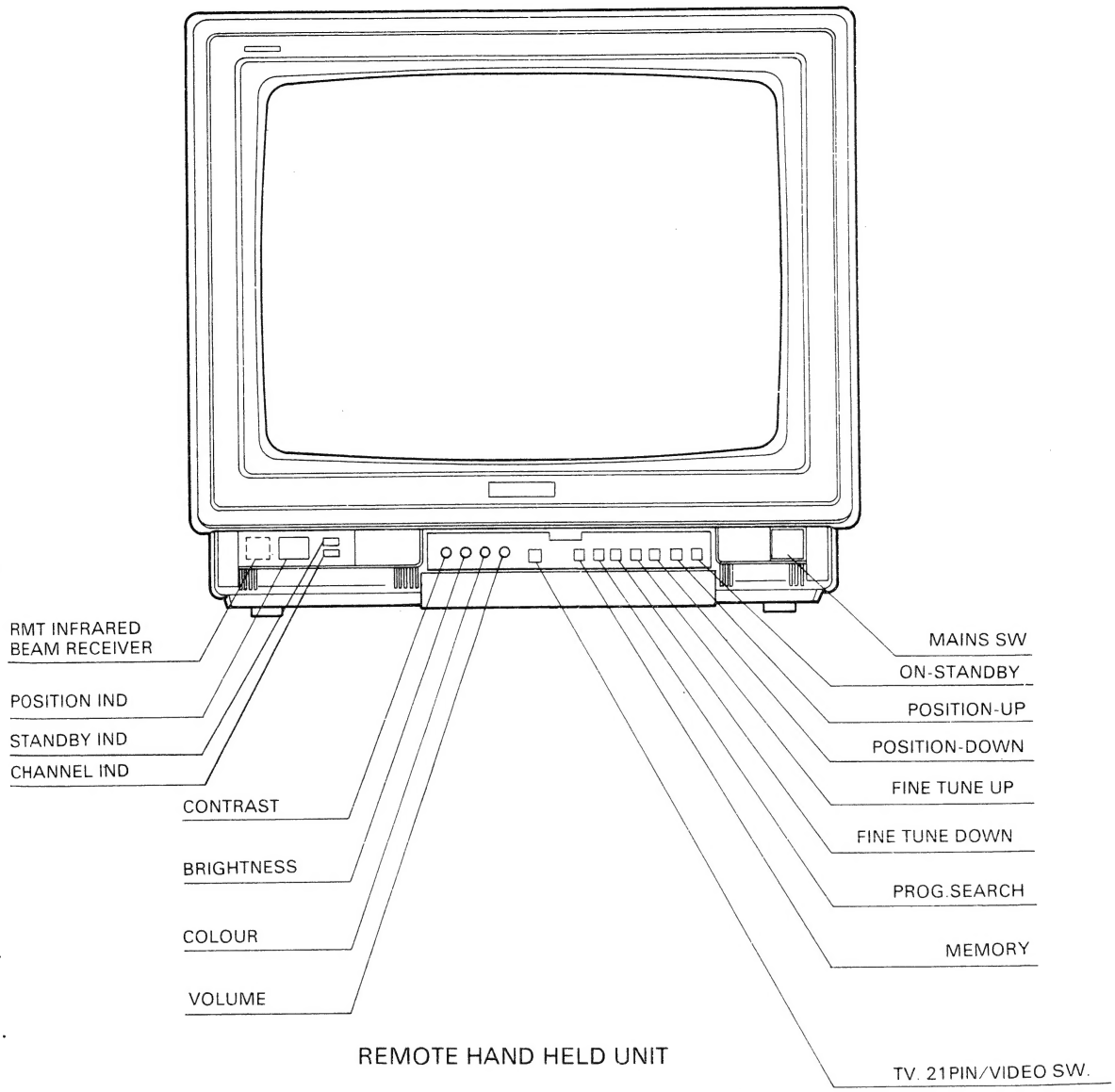
SAFETY PRECAUTION

1. This receiver has a nominal working E.H.T. voltage of 23kV. Extreme caution should be exercised when working on the receiver with the back removed.
   Do not attempt to service this receiver if you are not conversant with the precautions and procedures for working on high voltage equipment. When handling or working on the C.R.T., always discharge the anode to the receiver chassis before removing the anode cap.
   The C.R.T., if broken, will violently expel glass fragments and handling faulty or new C.R.T.'s should be carried out with extreme care.
   Do not hold the C.R.T. by the neck as this is a very dangerous practice.
2. It is essential that to maintain the safety of the customer all cable forms be replaced exactly as supplied from factory.
3. A small part of the chassis used in this receiver is, when operating, at approximately half mains potential at all times. It is therefore essential in the interest of safety that when serving or connecting any test equipment the receiver should be supplied via a suitable isolating transformer of adequate rating.
4. Replace blown fuses within the receiver with the fuse specified in the parts list.
5. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components, identified by the international hazard symbols on the circuit diagram and parts list, it must be a Toshiba approved type and must be mounted as the original.
6. Keep wires away from high voltage or high temperature components.

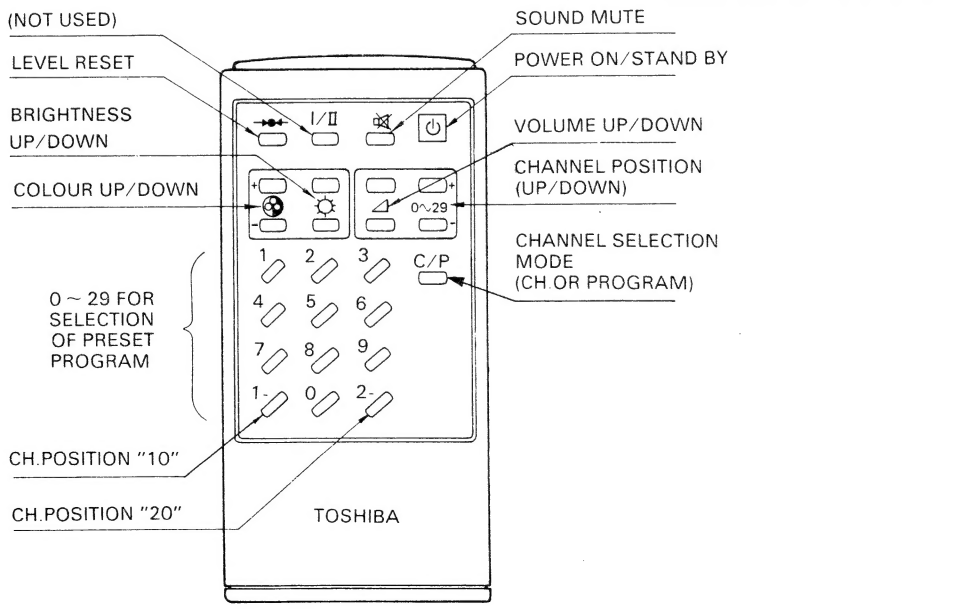
PRODUCT SAFETY NOTICE

Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY radiation protection afforded them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the schematic diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-RAY radiation.

FRONT CONTROLS VIEW



REMOTE HAND HELD UNIT



WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X—RAY RADIATION PRECAUTION," "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL

INSTALLATION AND SERVICE ADJUSTMENT

GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 220 volts 50Hz AC two pin power outlet.

Turn the receiver ON.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after Mains switch is switched ON. If the set is moved or faced in a different direction, the Mains switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 26.5kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 26.5kV under any conditions.

HORIZONTAL OSCILLATOR ADJUSTMENT

If there is an indication of unstable horizontal sync., adjust the HORIZONTAL HOLD Control (R451) to remove the condition. Adjust the HORIZONTAL HOLD to the centre of the pull-in range.

VERTICAL OSCILLATOR ADJUSTMENT

If the picture moves up or down on the screen, adjust the VERTICAL HOLD Control (R351) until there is a single image without vertical movement.

HEIGHT ADJUSTMENT

HEIGHT Control (R352) on MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2cm at top and bottom.

FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

DELAYED R-F AGC ADJUSTMENT

1. Tune the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on MAIN Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) is reduced to minimum on the picture.

BELL COIL (LM51) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the terminal TPM-01.
3. Adjust LM51 for flat level of amplitude in each colour bar waveform on the scope. (See Figure 1.)

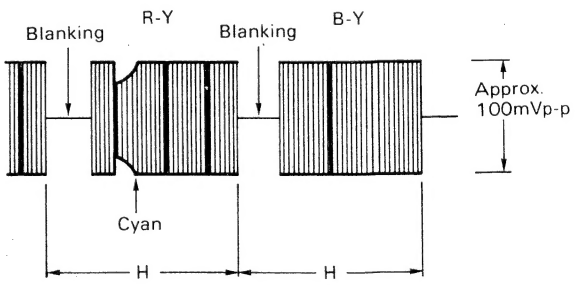


Figure 1.

IDENT COIL (LM52) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the DC voltmeter (Digital Voltmeter) to the pin 26 of ICM01.
3. Adjust LM52 for the maximum indication (approx. DC10V) on the meter.

B-Y, R-Y DEMOD COIL (LM53, LM54) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the pin 22 of ICM01.
3. Adjust LM53 so that the white level in picture part reaches to the vertical retrace line. (See Figure 2.)
4. Then change the connection of synchroscope from the pin 22 to the pin 18 of ICM01.
5. Adjust LM54 so that the white level in picture part reaches to the vertical retrace line. (See Figure 3.)

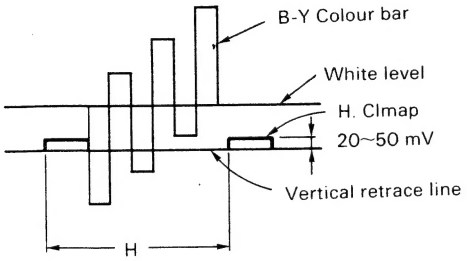


Figure 2.

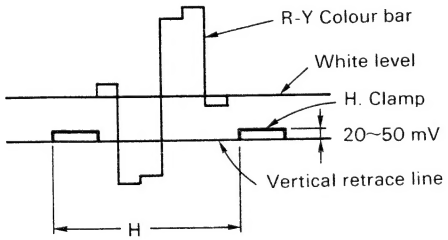


Figure 3.

PAL MATRIX ADJUSTMENT

1. Tune in the colour programme including the colour bar signals.
2. Set the COLOUR Control VR to obtain the proper colour.
3. If the PAL MATRIX adjustment is incorrect, the Venetian Blind effect would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind effect.
5. Next, connect a capacitor (30 to 50pF) to the capacitor C512 in parallel. If the Venetian Blind increases, adjust 1H AMP ADJ. VR (R551) to minimize the Blind.
6. If, after removing the capacitor, the effect persists, repeat Items 4 and 5 until it is eliminated, even when the capacitor is connected.
7. After removing an additional capacitor (30 to 50pF), set COLOUR control to low saturation and adjust coil L552 for maximum colour saturation.

SIF DET. COIL ADJUSTMENT

1. Tune in a programme which has a pure tone (for example 400 Hz or 1 kHz).
2. Adjust SIF DET. COIL (L602) so that the sound output power goes to maximum.

CRT GREY SCALE ADJUSTMENT

1. Tune in an active channel.
2. Set the COLOUR Control to minimum.
3. Set the MODE SW, S202 in the "TV" position.
4. Turn the SCREEN Control (on T461) fully counter-clockwise.
5. By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) clockwise from the minimum, set them to the mid position.
6. Remove the 2 pin jumper (MH08) connector on the 21 pin board.
7. Short temporarily terminals (J) and (H) (P530) on the MAIN Board with a jumper wire.
8. Rotate the SCREEN Control gradually clockwise until the first horizontal line of a colour (RED, GREEN or BLUE) appears slightly on the screen. Set the SCREEN Control to this position.
   At the base of the colour, rotate the remaining two CUT OFF Controls gradually clockwise until the horizontal lines of each colour appear slightly on the screen.
   Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE).
   The lines may look like white if the CUT OFF Controls are adjusted properly.
9. Remove a jumper wire between terminals (J) and (H) and reconnect MH08.
10. Rotate the BRIGHTNESS and CONTRAST Controls to the maximum.
11. Rotate the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls to obtain a good white balance in both low and high light areas.

SUB-BRIGHTNESS ADJUSTMENT

1. Tune in a colour programme.
2. Set the CONTRAST Control to the maximum and the BRIGHTNESS Control to the centre (click-position).
3. Set the COLOUR Control to the centre.
4. Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the Controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

COLOUR PURITY AND CONVERGENCE ADJUSTMENT

It should be remembered that the purity magnet and Deflection Yoke form part of the integrated tube components' assembly.
As these were aligned and fixed during manufacture, it is advisable that the sealing compound should not be broken and the replacement of the whole picture tube with neck components should be taken for servicing.
However the typical procedure for some model is described as follows only for reference.

Note: Before attempting any purity and/or convergence adjustments, the receiver should be operated for at least fifteen minutes.

COLOUR PURITY ADJUSTMENT

1. Demagnetize the picture tube and cabinet using a degaussing coil.
2. Turn the CONTRAST and BRIGHTNESS Controls to maximum.
3. Adjust RED and BLUE CUT OFF controls (R557 and R559) to provide only a green raster. Advance the GREEN CUT OFF Control (R558) if necessary.
4. Loosen the clamp screw holding the yoke, and slide the yoke backward or forward to provide vertical green belt (zone) in the picture screen.
5. Remove the Rubber Wedges.
6. Rotate and spread the tabs of the purity magnet (see Figure 5) around the neck of the picture tube until a green belt is obtained in the centre of the screen. And at the same time, centre the raster vertically by adjusting the magnet.
7. Move the yoke slowly forward or backward until a uniform green screen is obtained. Tighten the clamp screw.
8. Check the purity of the red and blue raster by adjusting the CUT OFF Controls.
9. Tighten the clamp screw of the yoke temporarily.
10. Obtain a white raster; referring to "CRT GREY SCALE ADJUSTMENT".
11. Proceed with convergence adjustment.

CONVERGENCE ADJUSTMENTS

■ Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (see Figure 5) and superimpose red and blue vertical lines in the centre area of the picture screen. (See Figure 6.)
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See Figure 6.)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3, 4, 5 with understanding red, green and blue movement, because 4-Pole Magnets and 6-Pole Magnets have mutual affection and it makes dots movement complex.

■ Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in Figure 4 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See Figure 6.)
   Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See Figure 6.)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence.
   Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges.

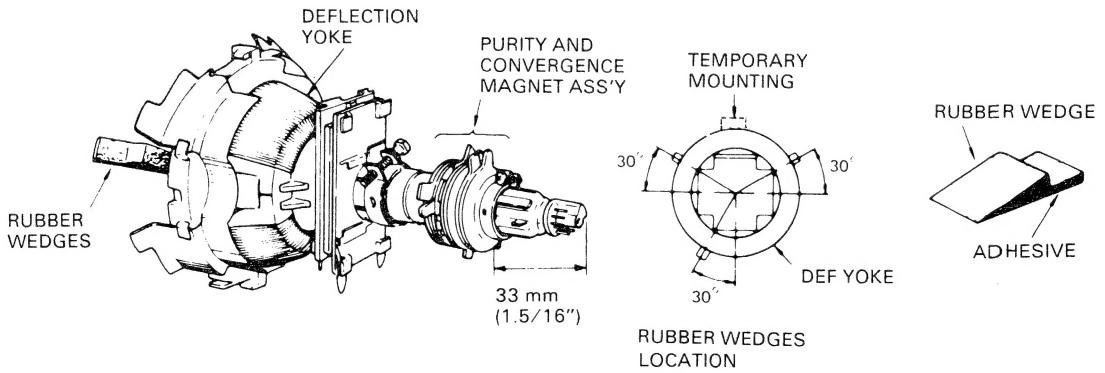


Figure 4.

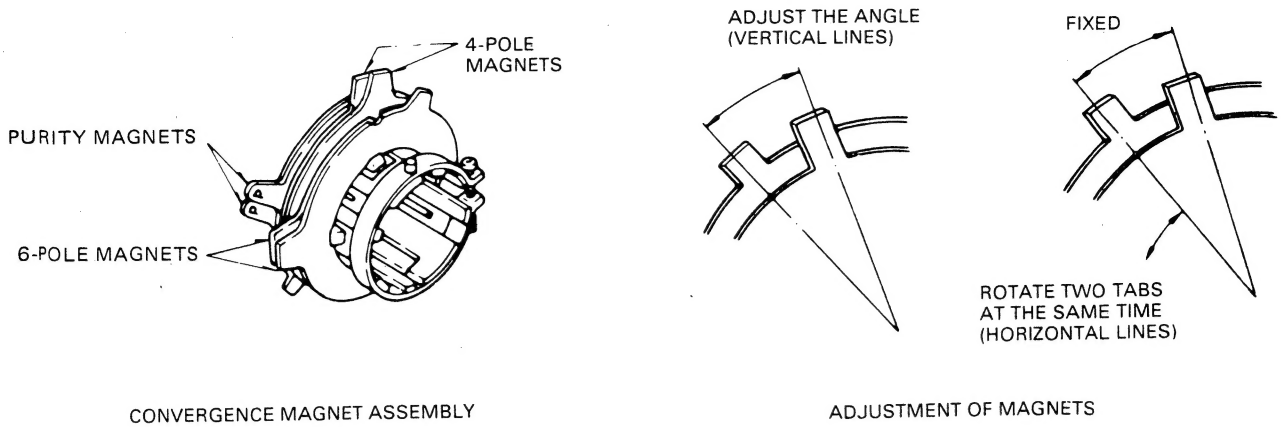
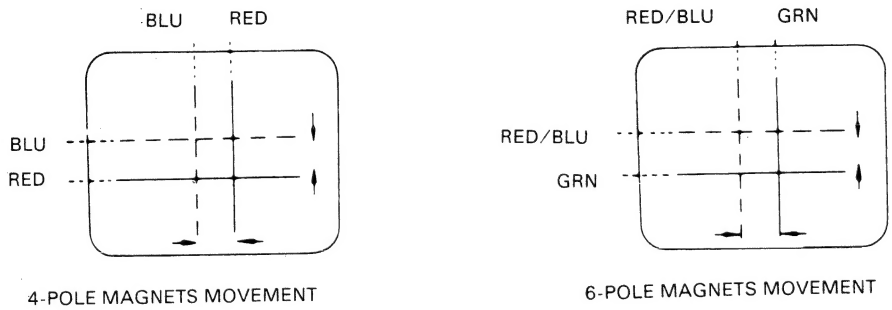


Figure 5.



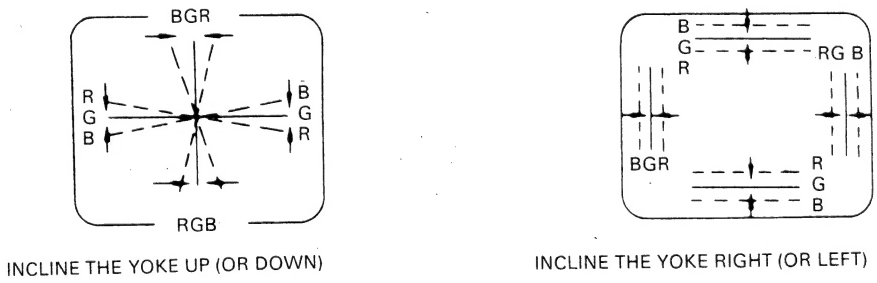


Figure 6. Dot Movement Pattern

GENERAL ALIGNMENT INSTRUCTIONS

1. GENERAL

The alignment procedures described below should only be used when absolutely necessary.
The test equipment, alignment procedures and bias values specified must be used to ensure the correct operation of the television receiver.

2. EQUIPMENT TERMINATION

The alignment pads and probes have been designed to give optimum results when used with the specified test equipment. Incorrect matching will produce distorted waveforms or voltages making accurate alignment impossible.
To avoid stray pick-up, when constructing pads and probes, keep any unshielded leads below 2.5 cm in length.

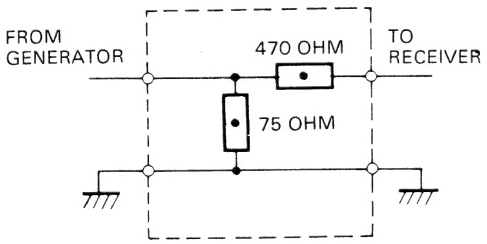
3. SIGNAL OVERLOADING

When using the sweep generator, keep the output as low as possible to avoid overloading. To check for this condition, turn the sweep generator output to minimum and then gradually increase the level until a response is obtained. If the level is then increased further, it should only change the amplitude and not the configuration of the response. If the response begins to flatter at the top or to drop below the base line, decrease the sweep generator output to restore the correct configuration of the response.

The oscilloscope gain should be as high as possible to maintain a usable pattern with the peak to peak values stated. This procedure will allow the sweep generator output to be kept low and thus avoid overloading.
If 'markers' from a marker generator are inserted, the response should not be distorted.

4. TEST EQUIPMENT REQUIRED

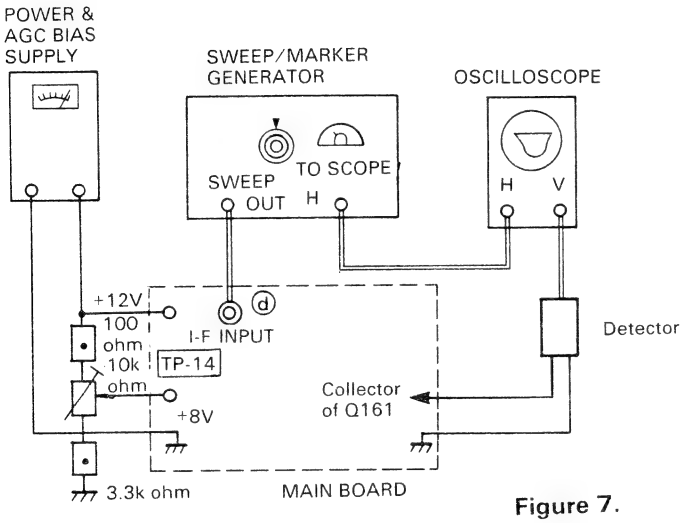
1. Wide Band Oscilloscope
2. Colour Bar/Dot/Crosshatch Generator
3. TV Sweep and Marker Generator
4. High Impedance Voltmeter or DVM
5. Multimeter
6. AGC Bias Supply (12V, 300 mA)
7. Direct Low Capacitance Probe
8. Matching Pad (See the figure below.)
9. External Degaussing Coil
10. Microscope, 10 or 12 times magnification (approximately), to allow observation of the dot structure of the C.R.T.



Matching Pad

PICTURE I-F TRAP ALIGNMENT

NOTE ..... Perform this adjustment prior to I-F SWEEP and AFC ALIGNMENTS.
GENERAL ..... Refer to Figure 7 for the equipment connection.
PRELIMINARY STEPS ..... 1. Disconnect the solder link SL-1 (◐ see Figure 7) on the foil side of the Main Board.
2. Supply +12 volts to the Main Board.
3. Supply +8 volts bias to terminal "TP-14" on the Main Board.
4. Turn AGC DELAY Control (R151) on the Main Board fully clockwise.
SWEEP/MARKER GENERATOR ..... Connect to the point ⓓ as shown in Figure 7 on the Main Board.
OSCILLOSCOPE ..... Connect through the detector (See figure 9.) to the collector of Q161 on the Main Board.



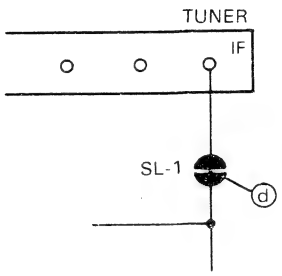


Figure 7.

STEP	SWEEP/MARKER GENERATOR	ADJUST	PROCEDURE
TRAP ALIGNMENT Control the sweep output for easy alignment. (See Figure 8.) Set the IF makers for 40.4MHz (P + 1.5MHz) and 31.9MHz (P-7MHz).			
Trap coil L107	40.4MHz Marker "ON"	L107 L108	1. Adjust L107 so the 40.4MHz marker point is placed at bottom of response. (See Figure 9.) 2. Adjust L108 so the 31.9MHz marker point is placed at bottom of response. (See Figure 8.) 3. Repeat items 1 and 2 above for the precise adjustment.
Trap coil L108	31.9MHz Marker "ON"		

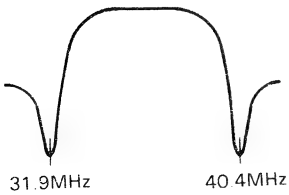


Figure 8. Trap Response

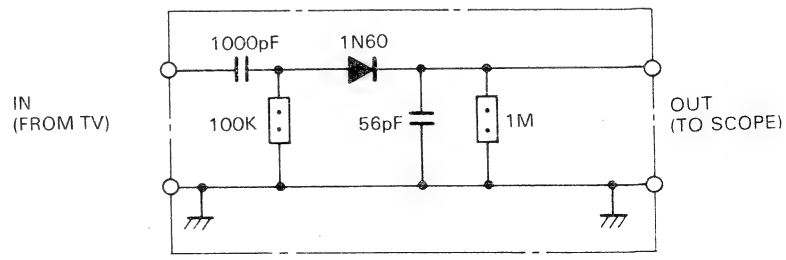


Figure 9. Detector Diagram

PICTURE I-F SWEEP ALIGNMENT

GENERAL .....Refer to Figure 10 for test equipment connection.
PRELIMINARY STEPS .....1. Disconnect the solder link SL-1 (◐ see Figure 10) on the foil side of the Main Board.
2. Supply +12 volts to the Main Board.
3. Supply +8 volts bias to terminal "TP-14" on the Main Board.
4. Turn AGC DELAY Control (R151) on the Main Board fully clockwise.
SWEEP/MARKER GENERATOR .....Connect to the point ⓓ as shown in Figure 10 on the Main Board.
OSCILLOSCOPE .....Connect with direct probe to terminal 51 on the Main Board through 100k ohm resistor.

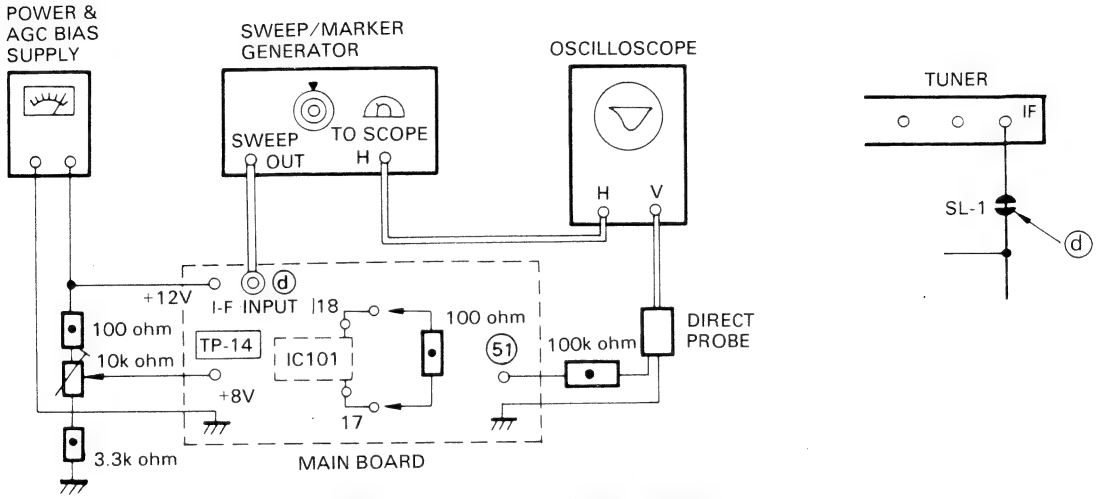


Figure 10. Picture I-F Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
L103 ALIGNMENT Set Oscilloscope gain for 0.1 v/cm. Adjust sweep output for easy alignment. (See Figure 11.)			
Detector Coil (L103)	38.9MHz Maker "ON"	L103	Adjust L103 for maximum gain at 38.9 MHz on SCOPE. (See Figure 11.)
OVERALL RESPONSE CHECK Observe with 0.5 volts pk to pk on the oscilloscope. Attach 100 ohm resistor between pins 17 and 18 of IC101 on the foil side of the Main Board.			
I.F. Overall Response	I.F Overall Response should be as shown in Figure 12.		
After completing the above steps, disconnect the equipment and re-solder the solder links. Switch on the receiver, and adjust the AGC Delay control (R151) following DELAYED R-F AGC ADJUSTMENTS.			

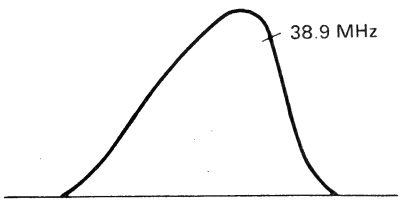


Figure 11. Magnified Response Curve

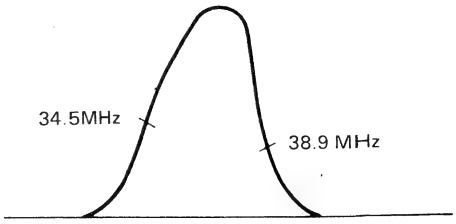


Figure 12. Overall Response Curve

AFC ALIGNMENT

GENERAL ..... Refer to Figure 13 for test equipment connection.

PRELIMINARY STEPS ..... 1. Disconnect the solder links SL-1, SL-3, SL-4 (◐ see Figures 10 and 13) on the foil side of the Main Board.
2. Supply +12 volts to the Main Board.
3. Supply +8 volts bias to terminal "TP-14" on the Main Board.
4. Turn AGC DELAY Control (R151) on the Main Board fully clockwise.

SWEEP/MARKER GENERATOR ..... Connect and tune following the same steps as given under PICTURE I-F SWEEP ALIGNMENT.

DVM ..... Connect direct probe between pin 1 (+) and pin 3 (-) of terminals of R152.

OSCILLOSCOPE ..... Connect using direct probe to pin 3 of R152 on the Main Board, after adjusting AFC Balance.

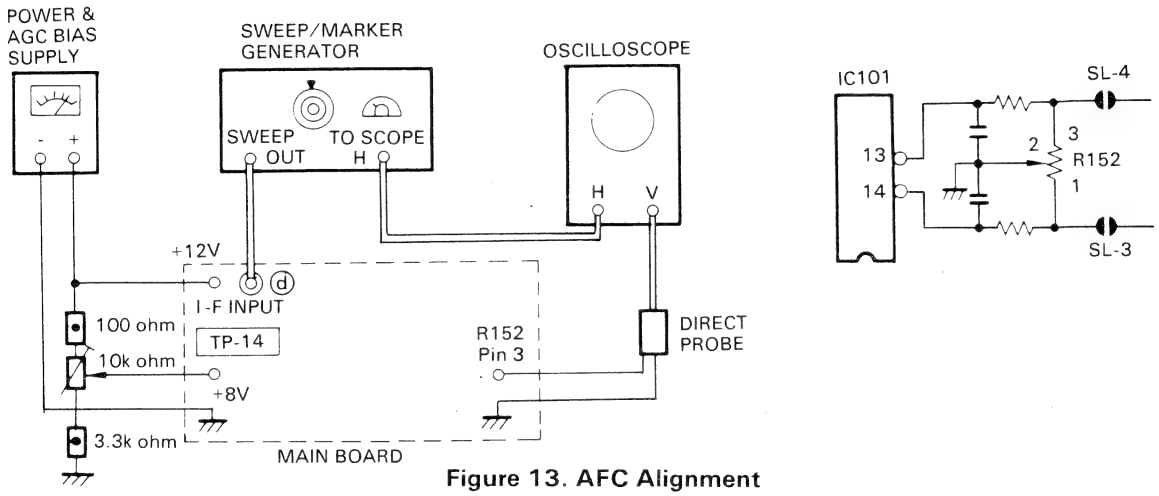


Figure 13. AFC Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
1. AFC Balance	NO SIGNAL	R152	Connect DVM(-) to pin 3 of R152 and (+) to pin 1 of R152. Adjust R152 (BALANCE ADJUST) for 0 volt reading on meter.
2. AFC Detector	38.9 MHz	L171	Remove the DVM. Connect Direct Probe to Terminal pin 3 of R152 on Main Board. Adjust L171 for the response shown in Figure 14.
After completing the above steps, disconnect the equipment and re-solder the solder links. Check AFC operation is normal. Readjust AGC DELAY control (R151) following DELAYED R-F AGC ADJUSTMENTS.			

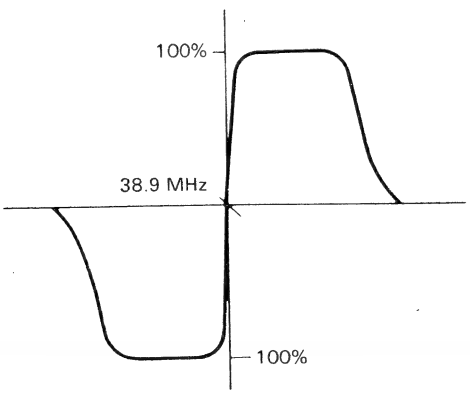


Figure 14. AFC Response

21 PIN ALIGNMENT

DATA BRIGHT, DATA RED CUT-OFF AND DATA BLUE CUT-OFF ADJUSTMENT (RH51, RH52, RH53)

Note: This adjustment must be done after sub-brightness adjustment on page 5 is finished.

1. Check the white balance of the regular TV picture for normal.
2. Receive the regular TV picture and set the Colour control to minimum.
3. Set MODE SW. S202 in the "TV" position.
4. Rotate VR (RH51, RH52, RH53) fully counterclockwise.
5. Set Brightness Control VR to maximum.
6. Short circuit 2-Pin plug (PH07) on the 21 pin Board and short circuit between terminals (J) and (H) (P530) on the Main Board.
   Screen will show one horizontal line.
7. Rotate VR (RH53) to the position where green color just appears on the horizontal line.
8. Adjust VR (RH51, RH52) for the white line on screen.
9. Remove short circuiting on the 21 pin and Main Boards.
10. Check the white balance with a normal teletext signal received.

PICTURE POSITION ADJUSTMENT (RH54)

Some units which are connected to 21 pin socket may require adjustment of horizontal picture position.
Rotate auxiliary VR on the back in that case.
However, remember that the position of picture at normal TV signal is also shifted.

INFRARED SENSOR AMP ALIGNMENT
(Remote Control Receiver)

TUNING FREQUENCY ADJUSTMENT

When LK01 CK01 is replaced, readjustment is required.
During adjustment, keep the VOLUME DOWN Button on the remote control hand unit pressed.

1. Turn the TV set on.
2. Connect an oscilloscope across CK01. (See Figure 15.)
3. Adjust LK01 for the maximum amplitude of waveform (See Figure 16) while holding down VOLUME DOWN Button on the hand unit.
4. Rotate the core of LK01 for the maximum amplitude of waveform on the scope, clockwise from the fully counterclockwise position. (See Figure 16.)
   Note: While adjustment, face the remote hand unit to such direction as to keep 1 Vp-p amplitude of waveform to prevent the saturation of response.
5. After completing adjustment, check the effective distance of the hand unit for approx. 5 meters or more.

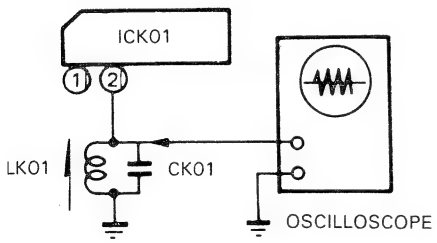


Figure 15. Equipment Connections

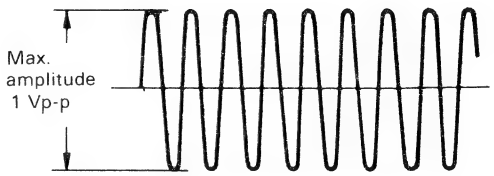
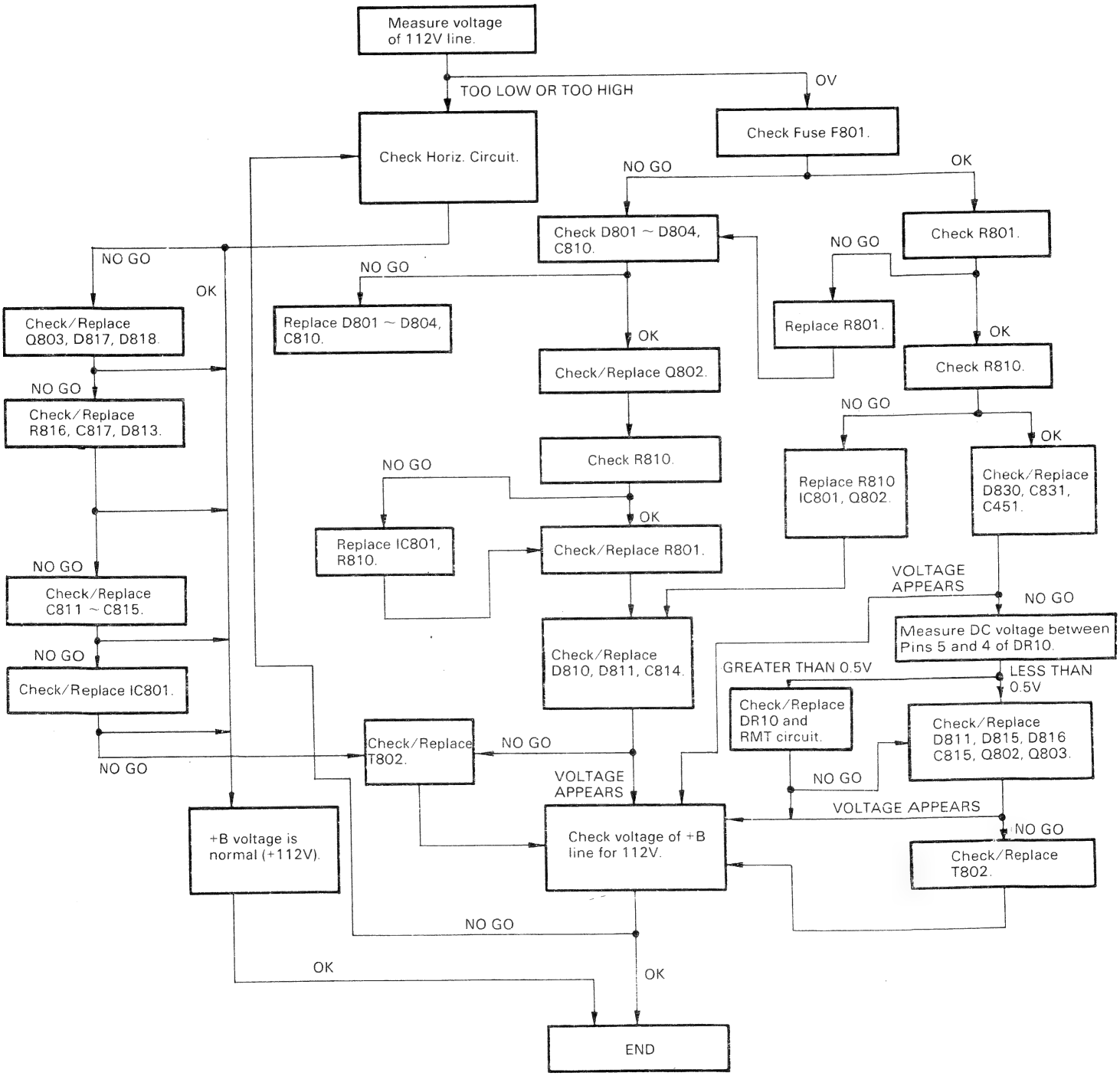


Figure 16. Waveform

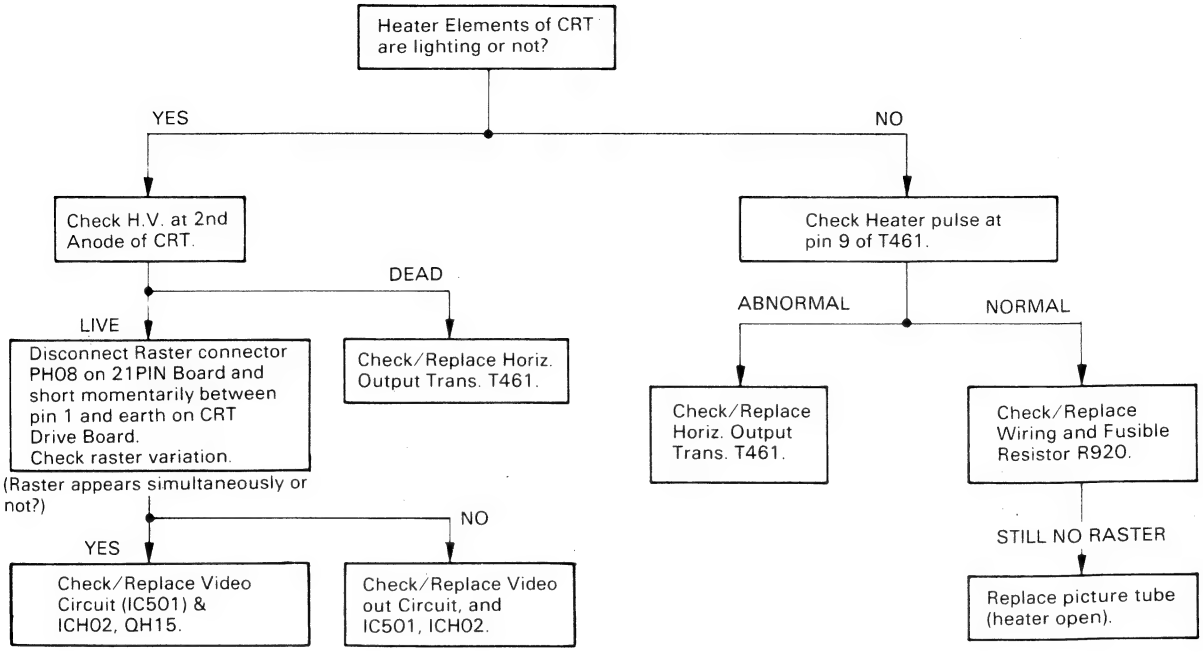
TROUBLESHOOTING CHARTS

The following charts are devoted to troubleshooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.
In order to utilize the charts (fault trees), firstly establish the complaint, i.e.- No Raster, No Sound.
Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

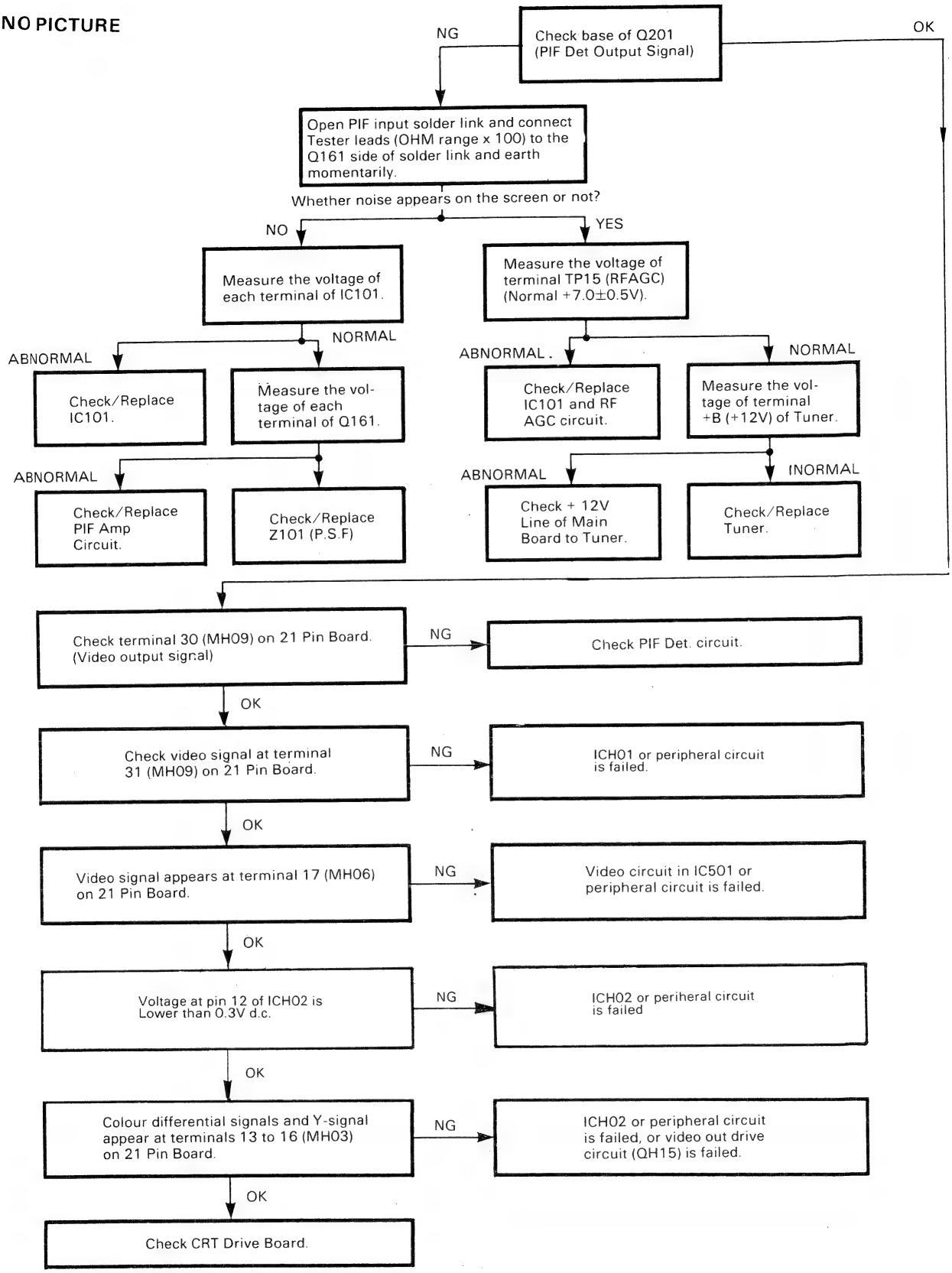
1. NO RASTER AND NO SOUND



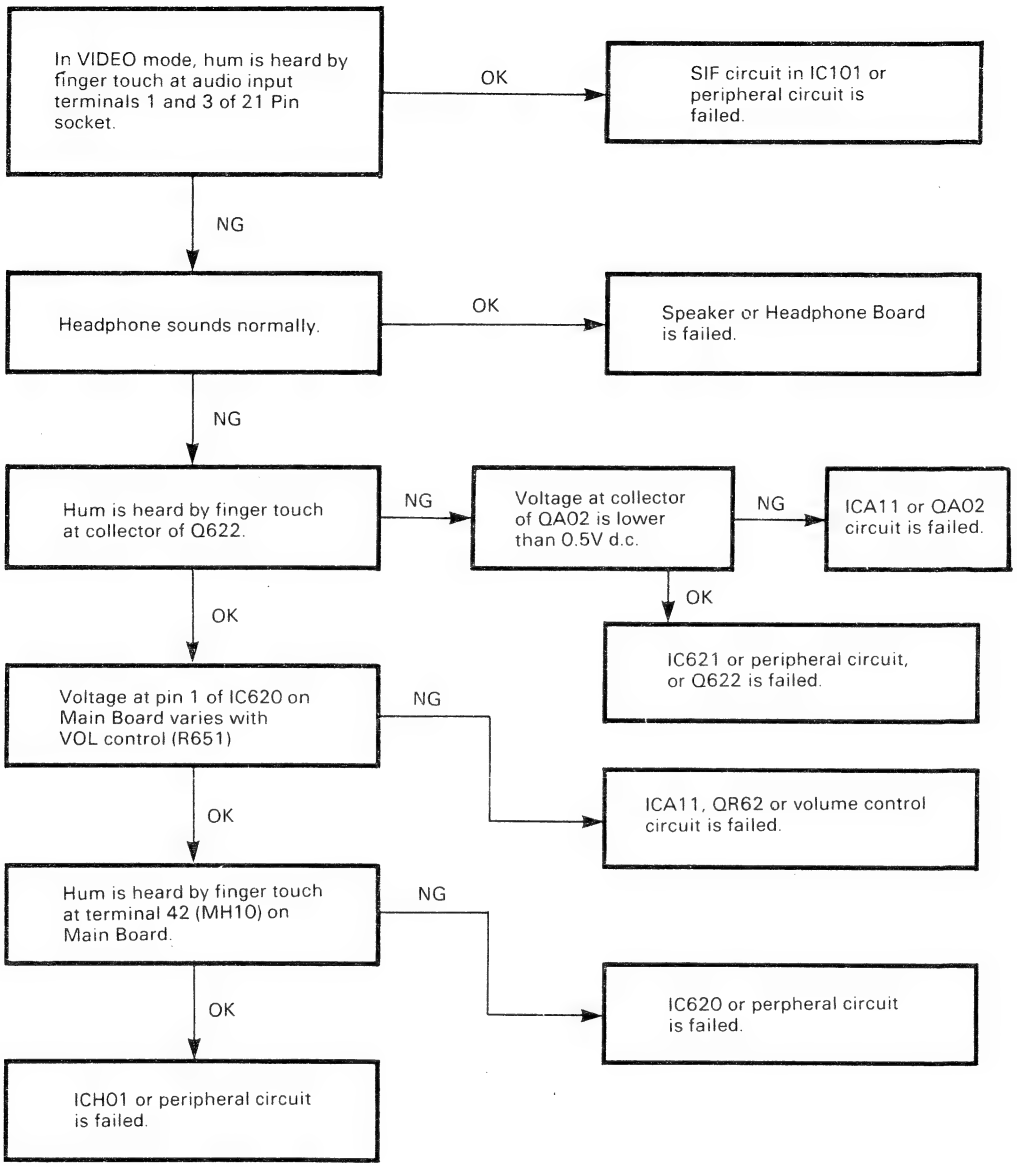
2. NO RASTER (SOUND OK)



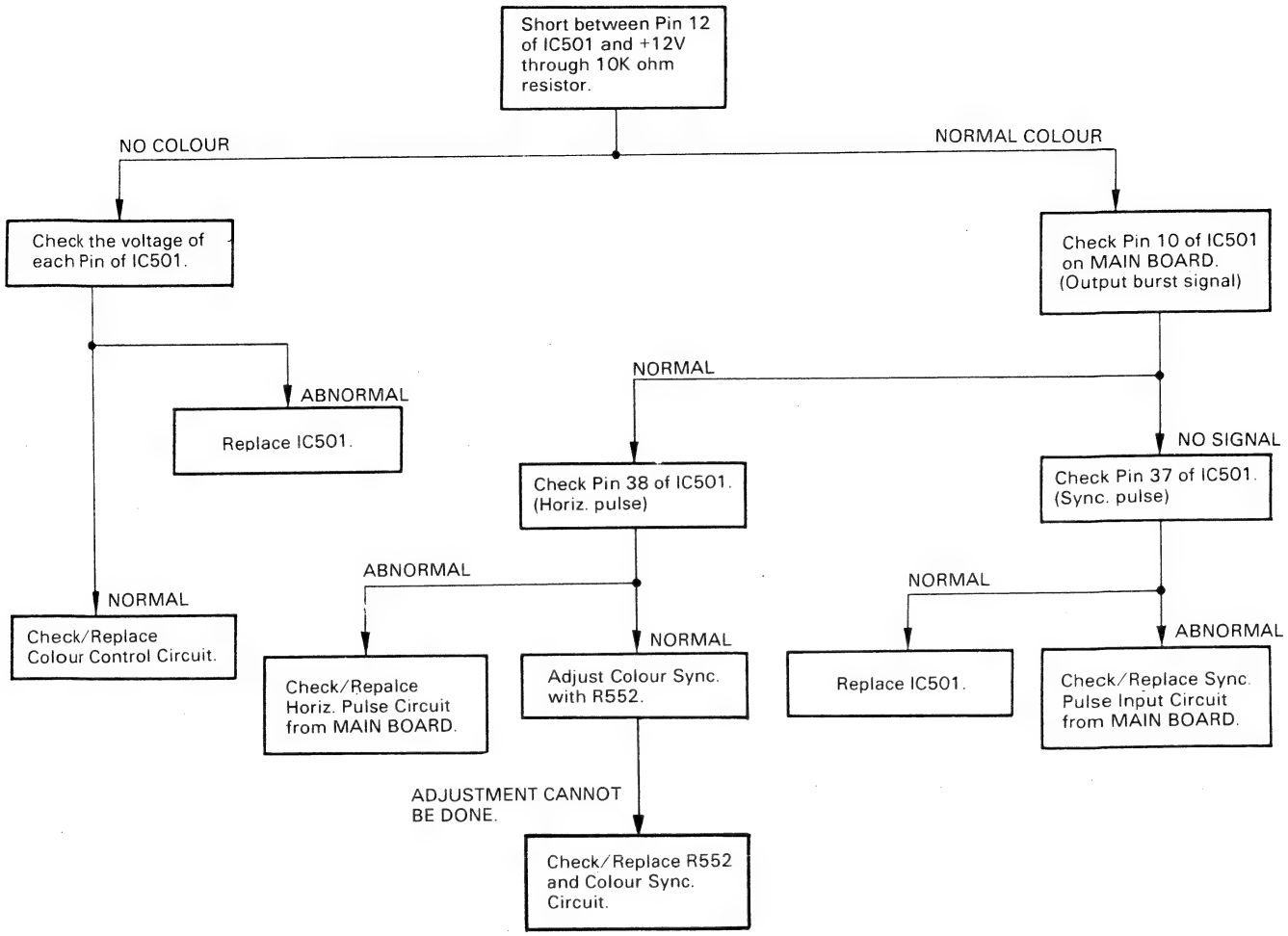
3. NO PICTURE


Check base of Q201 (PIF Det Output Signal)
NG
OK
Open PIF input solder link and connect Tester leads (OHM range x 100) to the Q161 side of solder link and earth momentarily.
Whether noise appears on the screen or not?
NO
YES
Measure the voltage of each terminal of IC101.
Measure the voltage of terminal TP15 (RFAGC) (Normal +7.0±0.5V).
ABNORMAL
NORMAL
Check/Replace IC101.
Measure the voltage of each terminal of Q161.
ABNORMAL
NORMAL
Check/Replace IC101 and RF AGC circuit.
Measure the voltage of terminal +B (+12V) of Tuner.
ABNORMAL
Check/Replace PIF Amp Circuit.
Check/Replace Z101 (P.S.F)
ABNORMAL
INORMAL
Check + 12V Line of Main Board to Tuner.
Check/Replace Tuner.
Check terminal 30 (MH09) on 21 Pin Board. (Video output signal)
NG
Check PIF Det. circuit.
OK
Check video signal at terminal 31 (MH09) on 21 Pin Board.
NG
ICH01 or peripheral circuit is failed.
OK
Video signal appears at terminal 17 (MH06) on 21 Pin Board.
NG
Video circuit in IC501 or peripheral circuit is failed.
OK
Voltage at pin 12 of ICH02 is Lower than 0.3V d.c.
NG
ICH02 or periheral circuit is failed
OK
Colour differential signals and Y-signal appear at terminals 13 to 16 (MH03) on 21 Pin Board.
NG
ICH02 or peripheral circuit is failed, or video out drive circuit (QH15) is failed.
OK
Check CRT Drive Board.

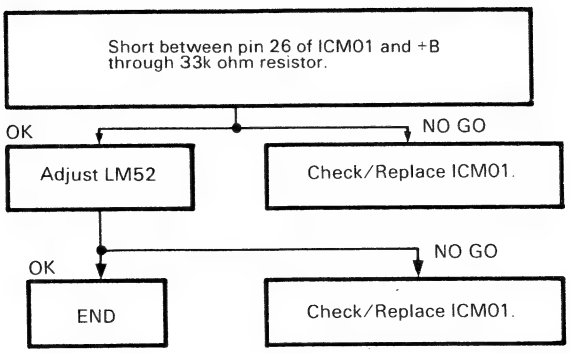
4. NO SOUND


In VIDEO mode, hum is heard by finger touch at audio input terminals 1 and 3 of 21 Pin socket.
OK
SIF circuit in IC101 or peripheral circuit is failed.
NG
Headphone sounds normally.
OK
Speaker or Headphone Board is failed.
NG
Hum is heard by finger touch at collector of Q622.
NG
Voltage at collector of QA02 is lower than 0.5V d.c.
NG
ICA11 or QA02 circuit is failed.
OK
IC621 or peripheral circuit, or Q622 is failed.
OK
Voltage at pin 1 of IC620 on Main Board varies with VOL control (R651)
NG
ICA11, QR62 or volume control circuit is failed.
OK
Hum is heard by finger touch at terminal 42 (MH10) on Main Board.
NG
IC620 or perpheral circuit is failed.
OK
ICH01 or peripheral circuit is failed.

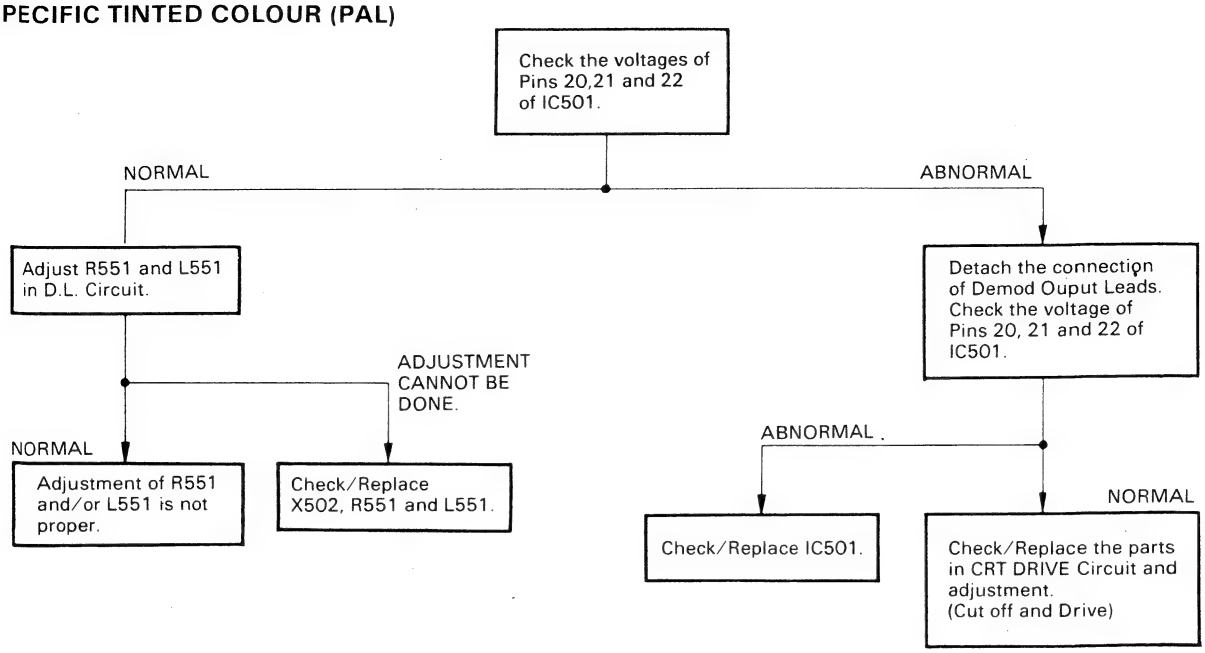
5. NO COLOUR (PAL)



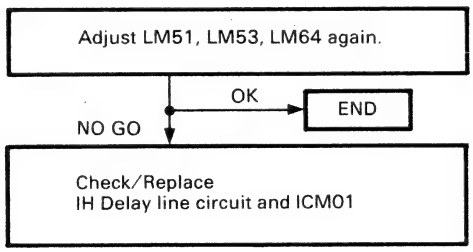
NO COLOUR (SECAM)



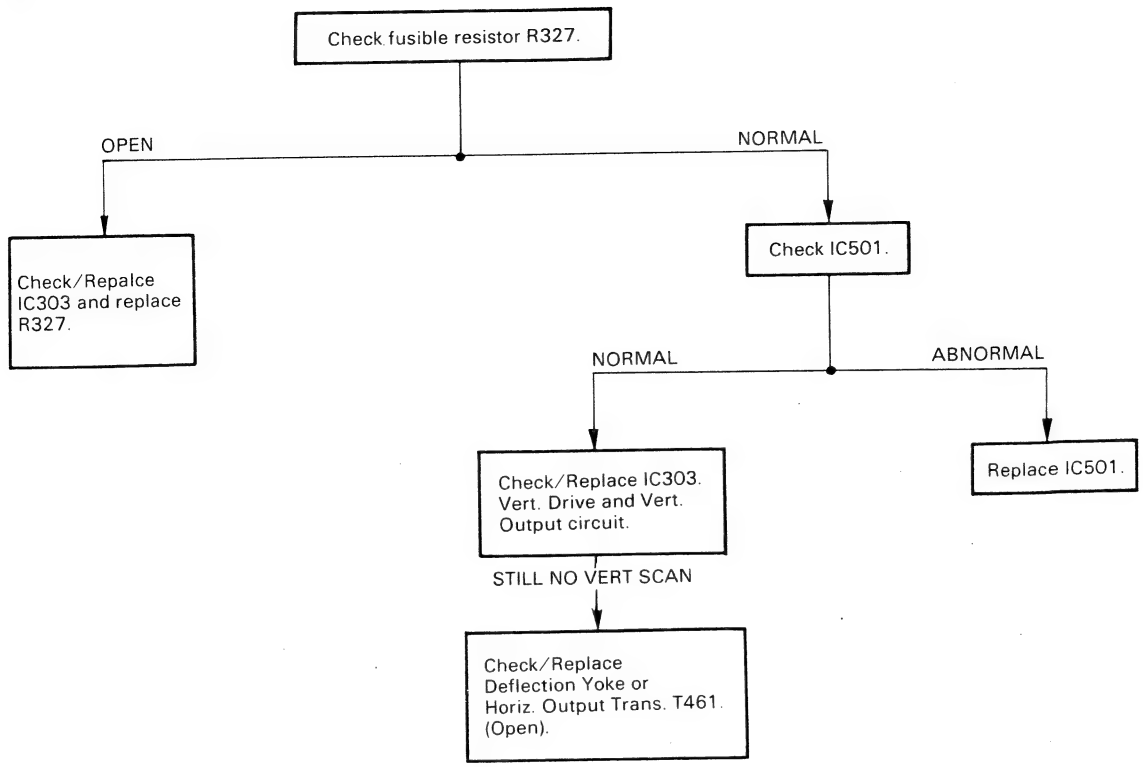
6. SPECIFIC TINTED COLOUR (PAL)



· SPECIFIC TINTED COLOUR (SECAM)



7. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



8. OUT OF VERT. SYNC. AND HORIZ. SYNC.

Check/Replace Sync. Circuit from pin 40 of IC501 to pin 37 or IC501.

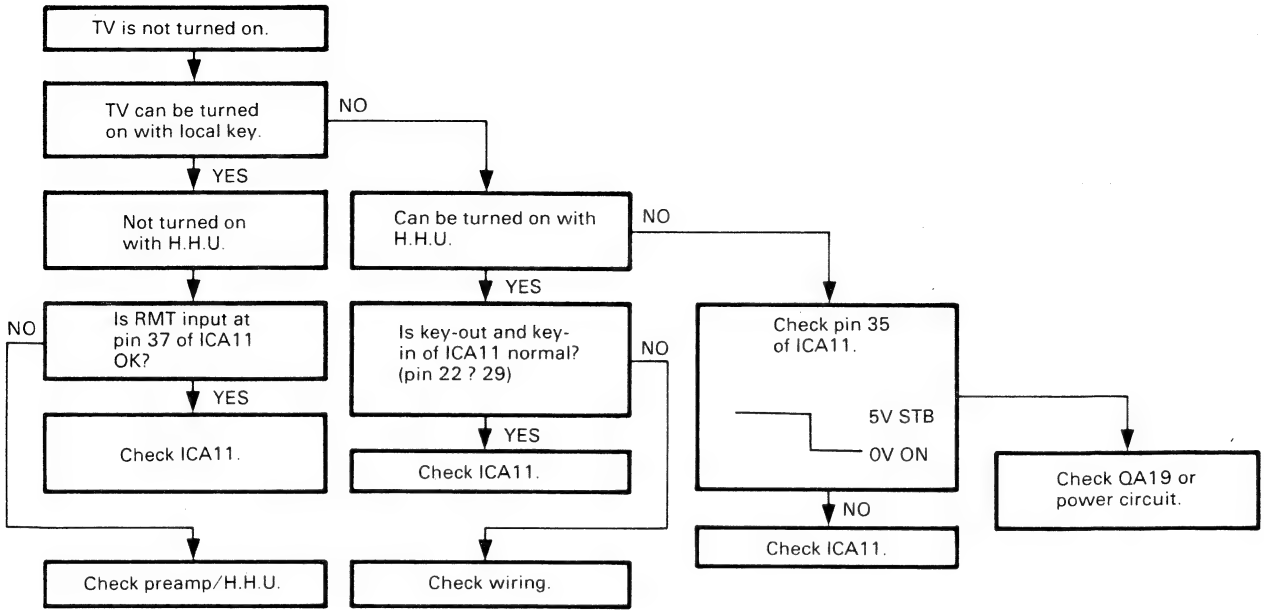
9. OUT OF VERT. SYNC.

Check/Replace Vert. OSC Circuit and Vert. Hold Circuit connected to Pins 26,27 and 29 of IC501. Check/Replace IC501.

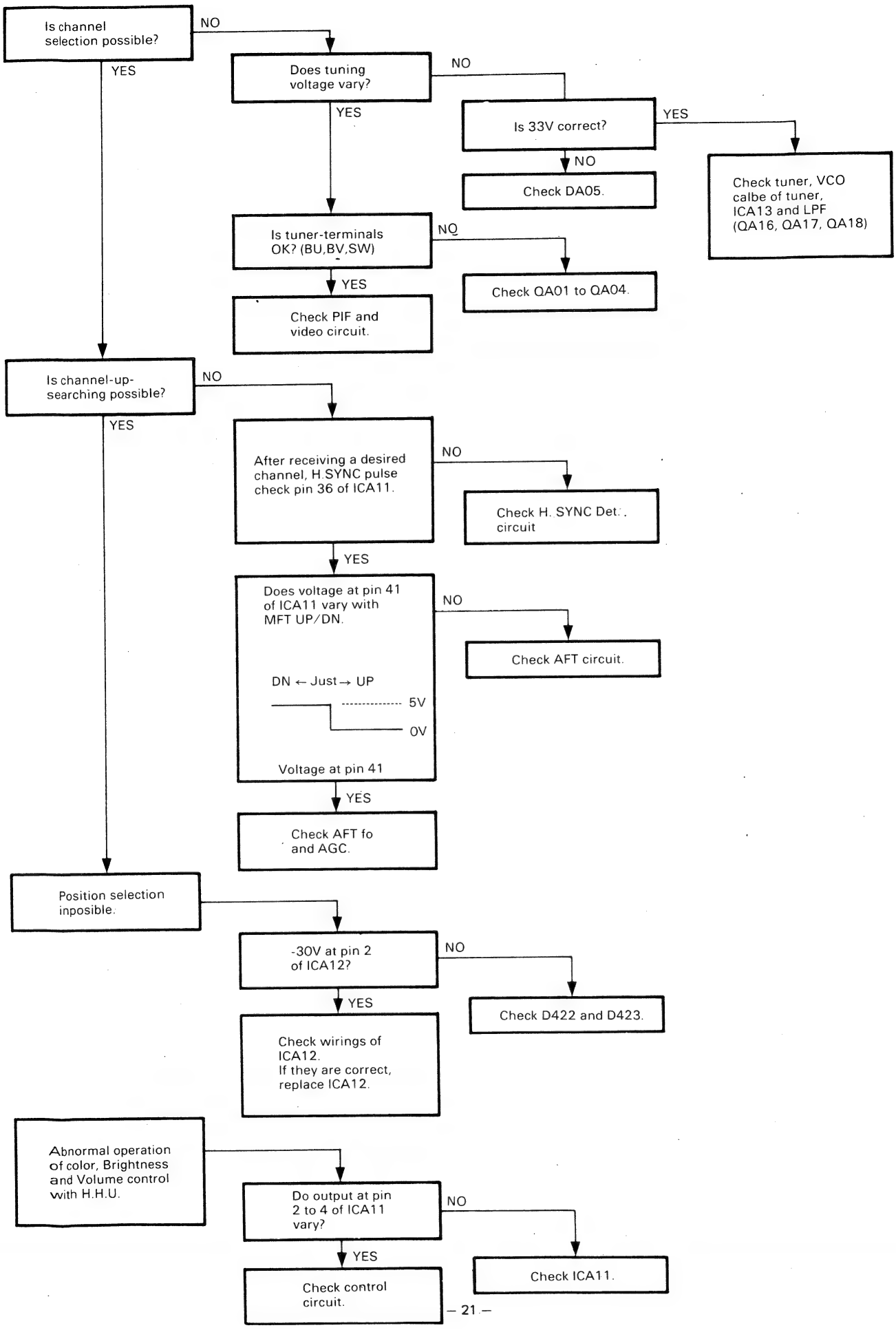
10. OUT OF HORIZ. SYNC.

Check/Replace Horiz. OSC Circuit, Horiz. Hold and Horiz. AFC Circuit connected to Pins 33 and 34 of IC501. Check/Replace IC501.

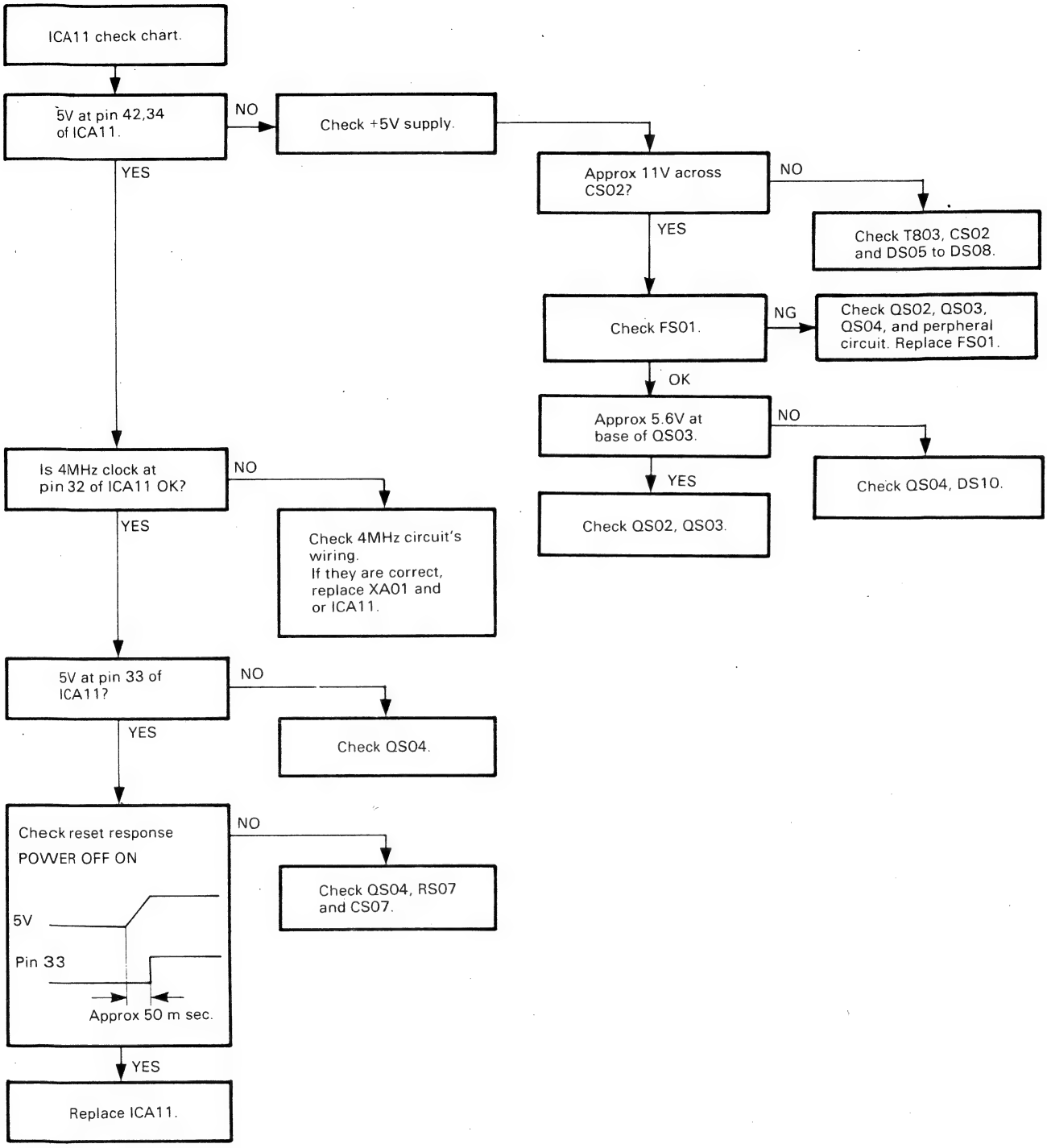
11. CHANNEL SELECTOR TROUBLE
[CHART 1]



[CHART 2]

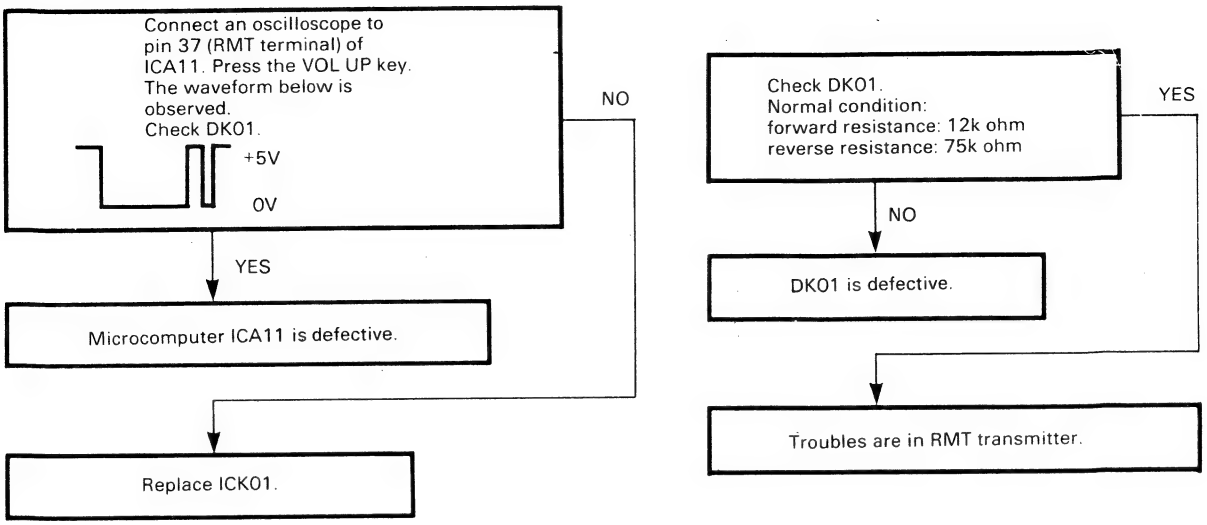

Is channel selection possible?
NO
YES
Does tuning voltage vary?
NO
YES
Is 33V correct?
YES
NO
Check DA05.
Check tuner, VCO calbe of tuner, ICA13 and LPF (QA16, QA17, QA18)
Is tuner-terminals OK? (BU,BV,SW)
NO
YES
Check QA01 to QA04.
Check PIF and video circuit.
Is channel-up-searching possible?
NO
YES
After receiving a desired channel, H.SYNC pulse check pin 36 of ICA11.
NO
YES
Check H. SYNC Det. circuit
Does voltage at pin 41 of ICA11 vary with MFT UP/DN.
NO
DN ← Just → UP
5V
0V
Voltage at pin 41
Check AFT circuit.
YES
Check AFT fo and AGC.
Position selection inposible.
-30V at pin 2 of ICA12?
NO
YES
Check D422 and D423.
Check wirings of ICA12. If they are correct, replace ICA12.
Abnormal operation of color, Brightness and Volume control with H.H.U.
Do output at pin 2 to 4 of ICA11 vary?
NO
YES
Check ICA11.
Check control circuit.

[CHART 3]


ICA11 check chart.
5V at pin 42,34 of ICA11.
NO
Check +5V supply.
YES
Approx 11V across CS02?
NO
Check T803, CS02 and DS05 to DS08.
YES
Check FS01.
NG
Check QS02, QS03, QS04, and perpheral circuit. Replace FS01.
OK
Approx 5.6V at base of QS03.
NO
Check QS04, DS10.
YES
Check QS02, QS03.
Is 4MHz clock at pin 32 of ICA11 OK?
NO
Check 4MHz circuit's wiring. If they are correct, replace XA01 and or ICA11.
YES
5V at pin 33 of ICA11?
NO
Check QS04.
YES
Check reset response
POWER OFF ON
5V
Pin 33
Approx 50 m sec.
NO
Check QS04, RS07 and CS07.
YES
Replace ICA11.

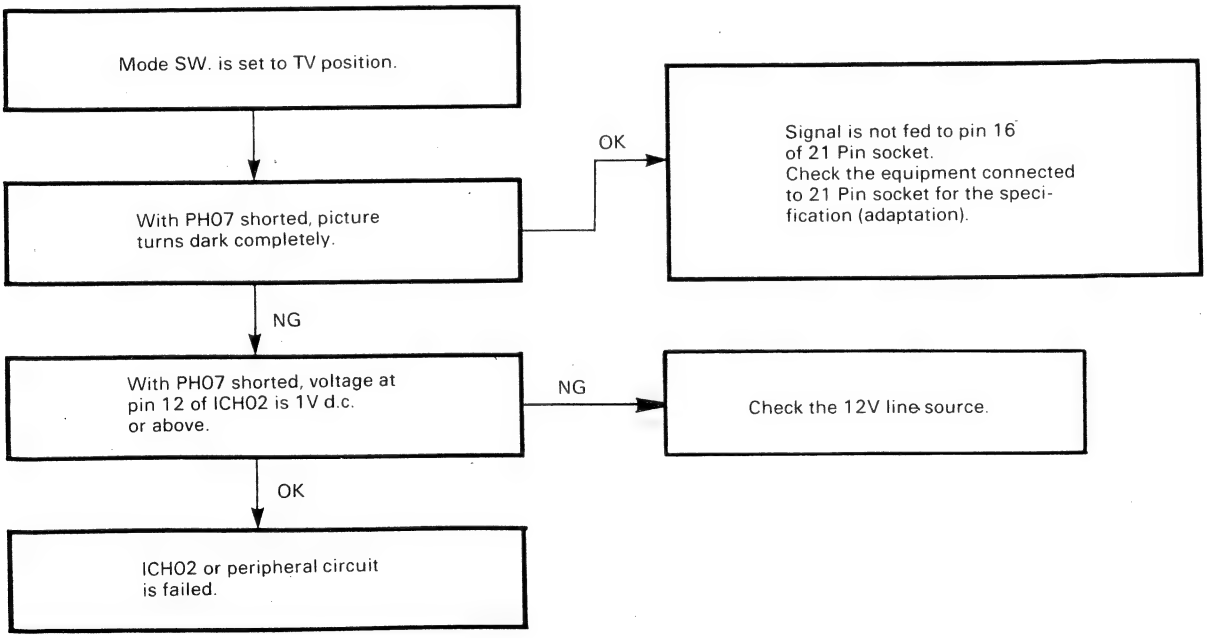
12. Remote Control Operation Check

Note: Before checking RMT operation, check that local key operation is proper.

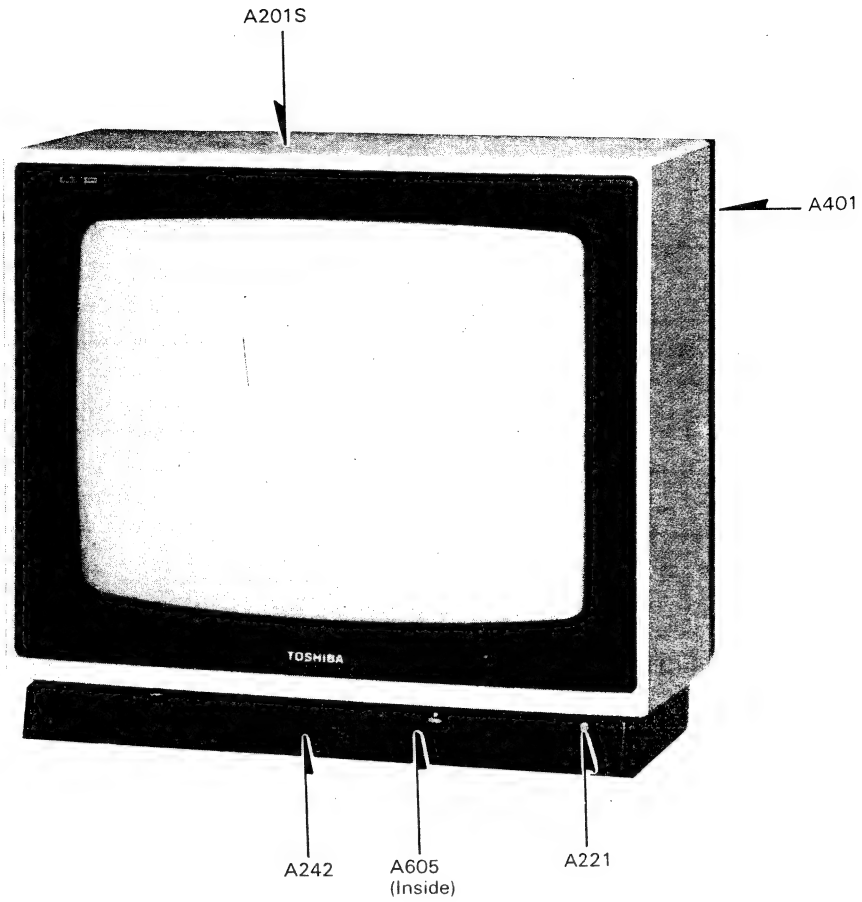


13. 21 PIN/TROUBLE

■NO OPERATION OF RGB (21PIN)



CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A201S	23807051	Front Cover
A221	32874431	Knob, Power
A242	23990079	Door
A243	23848226	Push Catch For Door
A401	23990080	Back Cover
A411	23992238	Label, Model Number, B/C
A605	23874550	Knob, TV 21PIN/VIDEO SW.
A701	23924449	Case
A702	23934872	Packing, Bottom
A703	23934873	Packing, Top
A710	23992237	Label, Model Number, Case
B111	23848140	Power Cord Holder
Y101	23994179	Owner's Manual
Y125	23124935	VHF Aerial, Telescopic
Y145	23293977	Adapter, Aerial Matching

CHASSIS REPLACEMENT PARTS LIST

Model 160F5WD

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types indentical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors .....CD:Ceramic Disk, PF:Plastic Film, EL:Electrolytic

Resistors .....CF:Carbon Film, CC:Carbon Composition, OMF:Oxide Metal Film, VR:Variable Resistor. MF:Metal Film, FR:Fusible Resistor

(All CD and PF capacitors are ±5%, 50v and all resistors, ±5%, 1/6w unless otherwise noted.)

CAPASITORS

Location No.	Part No.	Description
C101	24212102	CD, 1000pF, ±10%
C102	24212102	CD, 1000pF, ±10%
C103	24232103	CD, 0.01μF, +80%, −20%
C104	24232103	CD, 0.01μF, +80%, −20%
C105	24636229	EL, 2.2μF, 50V
C106	24617969	EL, 0.22μF, ±20%, 50V
C107	24636100	EL, 10μF, 50V
C108	24232103	CD, 0.01μF, +80%, −20%
C110	24232103	CD, 0.01μF, +80%, −20%
C111	24212222	CD, 2200pF, ±10%
C112	24212102	CD, 1000pF, ±10%
C113	24232103	CD, 0.01μF, +80%, −20%
C115	24212102	CD, 1000pF, ±10%
C116	24212222	CD, 2200pF, ±10%
C161	24212102	CD, 1000pF, ±10%
C162	24232103	CD, 0.01μF, +80%, −20%
C163	24212102	CD, 1000pF, ±10%
C164	24212102	CD, 1000pF, ±10%
C165	24356221	CD, 220pF
C171	24212102	CD, 1000pF, ±10%
C172	24212102	CD, 1000pF, ±10%
C174	24436090	CD, 9pF, ±0.25pF
C175	24436020	CD, 2pF, ±0.25pF
C176	24436020	CD, 2pF, ±0.25pF
C177	24085031	EL, 1μF, ±20%, Non-Polar
C204	24636010	EL, 1μF, 50V
C207	24636100	EL, 10μF, 50V
C210	24436680	CD, 68pF
C219	24633100	EL, 10μF, 16V
C240	24636479	EL, 4.7μF, 50V
C242	24636010	EL, 1μF, 50V
C301	24636010	EL, 1μF, 50V
C302	24232103	CD, 0.01μF, +80%, −20%
C303	24212561	CD, 560pF, ±10%
C304	24212681	CD, 680pF, ±10%
C305	24538153	PF, 0.015μF
C306	24538224	PF, 0.22μF
C307	24212101	CD, 100pF, ±10%
C309	24617981	EL, 2.2μF, ±10%, 50V
C310	24636478	EL, 0.47μF, 50V
C311	24796102	EL, 1000μF, 35V
C312	24232103	CD, 0.01μF, +80%, −20%
C313	24636101	EL, 100μF, 50V
C316	24795472	EL, 4700pF, 25V
C317	24617996	EL, 3.3μF, ±10%, 50V
C318	24214332	CD, 3300pF, ±10%, 500V
C319	24636478	EL, 0.47μF, 50V
C371	24591682	PF, 6800pF
C401	24593822	PF, 8200pF
C402	24636478	EL, 0.47μF, 50V
C403	24598562	PF, 5600pF
C405	24598302	PF, 3000pF
C406	24636229	EL, 2.2μF, 50V
C407	24636229	EL, 2.2μF, 50V
C408	24635100	EL, 10μF, 35V
C409	24232103	CD, 0.01μF, +80%, −20%
C410	24212152	CD, 1500pF, ±10%
C416	24214271	CD, 270pF, ±10%, 500V
C421	24642339	EL, 3.3μF, 160V
C422	24641100	EL, 10μF, 100V
C430	24591182	PF, 1800pF
⚠ C440	24095892	PF, 6800pF, ±3%, 1600V
C441	24214221	CD, 220pF, ±10%, 500V
C442	24095948	PF, 0.36μF, 200V
⚠ C444	24442101	CD, 100pF, ±10%, 2kV
C445	24095903	PF, 0.056μF, ±10%, 250V
C447	24644479	EL, 4.7μF, 250V
C448	24633222	EL, 2200μF, 16V
C449	24633471	EL, 470μF, 16V
C451	24640972	EL, 33μF, 160V
C463	24212222	CD, 2200pF, ±10%
C501	24436150	CD, 15pF
C502	24436100	CD, 10pF, ±0.25pF
C503	24232103	CD, 0.01μF, +80%, −20%
C504	24636010	EL, 1μF, 50V

Location No.	Part No.	Description
C506	24232103	CD, 0.01μF, +80%, −20%
C507	24232103	CD, 0.01μF, +80%, −20%
C509	24232103	CD, 0.01μF, +80%, −20%
C510	24232103	CD, 0.01μF, +80%, −20%
C511	24232103	CD, 0.01μF, +80%, −20%
C512	24356121	CD, 120pF
C513	24232103	CD, 0.01μF, +80%, −20%
C514	24636478	EL, 0.47μF, 50V
C515	24436220	CD, 22pF
C516	24353330	CD, 33pF
C517	24353680	CD, 68pF
C518	24636479	EL, 4.7μF, 50V
C519	24591223	PF, 0.022μF
C520	24591223	PF, 0.022μF
C523	24591473	PF, 0.047μF
C524	24436270	CD, 27pF
C527	24636100	EL, 10μF, 50V
C528	24436121	CD, 120pF
C530	24436121	CD, 120pF
C531(U901)	24212331	CD, 330pF, ±10%
C531(U902A)	24436180	CD, 18pF
C532	24212471	CD, 470pF, ±10%
C533	24212391	CD, 390pF, ±10%
C601	24436470	CD, 47pF
C602	24436470	CD, 47pF
C603	24232103	CD, 0.01μF, +80%, −20%
C604	24591332	PF, 3300pF
C606	24636100	EL, 10μF, 50V
C617	24353620	CD, 62pF
C628	24636229	EL, 2.2μF, 50V
C629	24538104	PF, 0.1μF
C630	24633101	EL, 100μF, 16V
C631	24538224	PF, 0.22μF
C632	24636010	EL, 1μF, 50V
C633	24591332	PF, 3300pF
C635	24436101	CD, 100pF
C636	24795102	EL, 1000μF, 25V
C637	24795102	EL, 1000μF, 25V
C640	24538104	PF, 0.1μF
C641	24636100	EL, 10μF, 50V
C642	24538104	PF, 0.1μF
C643	24538104	PF, 0.1μF
C644	24538123	PF, 0.012μF
C645	24538104	PF, 0.1μF
C646	24636100	EL, 10μF, 50V
C647	24636478	EL, 0.47μF, 50V
C661	24232103	CD, 0.01μF, +80%, −20%
C662	24232103	CD, 0.01μF, +80%, −20%
C680	24212681	CD, 680pF, ±10%
C681	24212471	CD, 470pF, ±10%
C682	24636010	EL, 1μF, 50V
C683	24232103	CD, 0.01μF, +80%, −20%
C685	24636010	EL, 1μF, 50V
⚠ C801	24098999	PF, 0.1μF, ±20%, AC250V
⚠ C802	24098999	PF, 0.1μF, ±20%, AC250V
C803	24094906	CD, 4700pF, +80%, −20%, AC250V
C804	24094906	CD, 4700pF, +80%, −20%, AC250V
C805	24094906	CD, 4700pF, +80%, −20%, AC250V

Location No.	Part No.	Description
C806	24094906	CD, 4700pF, +80%, −20%, AC250V
C810	24086987	EL, 120μF, 400V
C811	24591222	PF, 2200pF
C812	24598562	PF, 5600pF
C813	24636339	EL, 3.3μF, 50V
C814	24636220	EL, 22μF, 50V
C815	24538393	PF, 0.039μF
C816	24095935	PF, 1500pF, 1600V
C817	24797331	EL, 330pF, 50V
C819	24214331	CD, 330pF, ±10%, 500V
C820	24442181	CD, 180pF, ±10%, 2kV
C821	24214101	CD, 100pF, ±10%, 500V
C830	24215181	CD, 180pF, ±10%, 1kV
C831	24640972	EL, 33μF, 160V
C833	24796471	EL, 470pF, 35V
⚠ C881	24094838	CD, 2200pF, ±20%, AC400V
⚠ C882	24094838	CD, 2200pF, ±20%, AC400V
C901	24644010	EL, 1μF, 250V
C902	24095923	PF, 4700pF, 1600V
CA01	24641010	EL, 1μF, 100V
CA02	24232103	CD, 0.01μF, +80%, −20%
CA05	24636100	EL, 10μF, 50V
CA07	24636330	EL, 33μF, 50V
CA16	24212102	CD, 1000pF, ±10%
CA17	24212102	CD, 1000pF, ±10%
CA18	24436220	CD, 22pF
CA19	24436220	CD, 22pF
CA20	24436220	CD, 22pF
CA21	24436220	CD, 22pF
CA22	24436220	CD, 22pF
CA23	24436220	CD, 22pF
CA24	24436220	CD, 22pF
CA25	24436220	CD, 22pF
CA26	24633100	EL, 10μF, 16V
CA27	24641010	EL, 1μF, 100V
CA30	24436101	CD, 100pF
CA31	24436101	CD, 100pF
CA32	24232103	CD, 0.01μF, +80%, −20%
CA33	24232103	CD, 0.01μF, +80%, −20%
CA34	24633470	EL, 47μF, 16V
CA36	24212102	CD, 1000pF, ±10%
CA37	24633100	EL, 10μF, 16V
CA38	24436240	CD, 24pF
CA39	24436240	CD, 24pF
CA60	24212102	CD, 1000pF, ±10%
CA61	24212102	CD, 1000pF, ±10%
CA62	24232103	CD, 0.01μF, +80%, −20%
CA63	24591103	PF, 0.01μF
CA64	24538104	PF, 0.1μF
CA65	24212152	CD, 1500pF, ±10%
CA66	24212681	CD, 680pF, ±10%
CB02	24636229	EL, 2.2μF, 50V
CB03	24232103	CD, 0.01μF, +80%, −20%
CB09	24633330	EL, 33μF, 16V
CH01	24232103	CD, 0.01μF, +80%, −20%
CH02	24212102	CD, 1000pF, ±10%
CH06	24212102	CD, 1000pF, ±10%
CH07	24212102	CD, 1000pF, ±10%
CH08	24538104	PF, 0.1μF
CH09	24232103	CD, 0.01μF, +80%, −20%

Location No.	Part No.	Description
CH11	24206010	EL, 1μF, 50V
CH12	24206010	EL, 1μF, 50V
CH14	24206010	EL, 1μF, 50V
CH15	24206010	EL, 1μF, 50V
CH16	24232103	CD, 0.01μF, +80%, −20%
CH17	24203330	EL, 33μF, 16V
CH21	24206229	EL, 2.2μF, 50V
CH29	24436180	CD, 18pF
CH31	24232103	CD, 0.01μF, +80%, −20%
CH32	24232103	CD, 0.01μF, +80%, −20%
CH33	24203100	EL, 10μF, 16V
CH34	24203330	EL, 33μF, 16V
CH35	24206229	EL, 2.2μF, 50V
CH36	24206479	EL, 4.7μF, 50V
CH37	24203100	EL, 10μF, 16V
CH38	24794331	EL, 330μF, 16V
CH40	24232103	CD, 0.01μF, +80%, −20%
CH41	24794221	EL, 220μF, 16V
CH42	24206010	EL, 1μF, 50V
CH43	24232103	CD, 0.01μF, +80%, −20%
CH46	24232103	CD, 0.01μF, +80%, −20%
CH60	24212271	CD, 270pF, ±10%
CH61	24212271	CD, 270pF, ±10%
CH62	24212271	CD, 270pF, ±10%
CH63	24206010	EL, 1μF, 50V
CH64	24206010	EL, 1μF, 50V
CH65	24206010	EL, 1μF, 50V
CH82	24436470	CD, 47pF
CH84	24538473	PF, 0.047μF
CK01	24501222	PF, 2200pF
CK02	24538683	PF, 0.068μF
CK03	24633100	EL, 10μF, 16V
CK04	24633330	EL, 33μF, 16V
CK05	24633100	EL, 10μF, 16V
CK06	24633100	EL, 10μF, 16V
CK07	24593222	PF, 2200pF
CM01	24357220	CD, 22pF
CM07	24636010	EL, 1μF, 50V
CM09	24232103	CD, 0.01μF, +80%, −20%
CM10	24232103	CD, 0.01μF, +80%, −20%
CM11	24636478	EL, 0.47μF, 50V
CM14	24232103	CD, 0.01μF, +80%, −20%
CM15	24636010	EL, 1μF, 50V
CM17	24636010	EL, 1μF, 50V
CM19	24636010	EL, 1μF, 50V
CM21	24633100	EL, 10μF, 16V
CM23	24633100	EL, 10μF, 16V
CM25	24212102	CD, 1000pF, ±10%
CM26	24232103	CD, 0.01μF, +80%, −20%
CM27	24636010	EL, 1μF, 50V
CM28	24359390	CD, 39pF
CM29	24359680	CD, 68pF
CM31	24436331	CD, 330pF
CM32	24212122	CD, 1200pF, ±10%
CM33	24359390	CD, 39pF
CM34	24359560	CD, 56pF
CM36	24436331	CD, 330pF
CM38	24633100	EL, 10μF, 16V
CM39	24633100	EL, 10μF, 16V
CM40	24633331	EL, 330μF, 16V
CM41	24232103	CD, 0.01μF, +80%, −20%

Location No.	Part No.	Description
CM43	24232103	CD, 0.01μF, +80%, −20%
CM44	24232103	CD, 0.01μF, +80%, −20%
CM45	24633470	EL, 47μF, 16V
CM46	24436151	CD, 150pF
CM47	24436151	CD, 150pF
CM48	24436151	CD, 150pF
CM62	24436470	CD, 47pF
CM63	24436470	CD, 47pF
CM64	24232103	CD, 0.01μF, +80%, −20%
CM65	24232103	CD, 0.01μF, +80%, −20%
CM70	24357820	CD, 82pF
CM71	24212821	CD, 820pF, ±10%
CM73	24593122	PF, 1200pF
CR41	24636339	EL, 3.3μF, 50V
CR42	24232103	CD, 0.01μF, +80%, −20%
CR61	24636100	EL, 10μF, 50V
CR62	24232103	CD, 0.01μF, +80%, −20%
CR71	24636339	EL, 3.3μF, 50V
CR72	24232103	CD, 0.01μF, +80%, −20%
CS02	24795102	EL, 1000μF, 25V
CS04	24635470	EL, 47μF, 35V
CS07	24633470	EL, 47μF, 16V
CS08	24633470	EL, 47μF, 16V
CZ01	24094681	Capacitor Bolck, 2200pFx4, 50V
CZ02	24094681	Capacitor Bolck, 2200pFx4, 50V
CZ03	24094742	Capacitor Block, 1000pFx4, 50V

RESISTORS

R101	24366821	CF, 820 ohm
R104	24366683	CF, 68k ohm
R105	24366221	CF, 220 ohm
R107	24366824	CF, 820k ohm
R108	24366392	CF, 3900 ohm
R151	24066953	VR, 5k ohm, 1/10W
R152	24066946	VR, 1M ohm, 1/10W
R161	24366101	CF, 100 ohm
R162	24366102	CF, 1k ohm
R163	24366562	CF, 5600 ohm
R164	24366221	CF, 220 ohm
R165	24366471	CF, 470 ohm
R166	24366270	CF, 27 ohm
R167	24366680	CF, 68 ohm
R168	24366271	CF, 270 ohm
R201	24366221	CF, 220 ohm
R202	24366152	CF, 1500 ohm
R203	24366152	CF, 1500 ohm
R204	24366152	CF, 1500 ohm
R208	24366824	CF, 820k ohm
R209	24366104	CF, 100k ohm
R210	24366152	CF, 1500 ohm
R212	24366153	CF, 15k ohm
R213	24366223	CF, 22k ohm
R214	24366222	CF, 2200 ohm
R215	24366393	CF, 39k ohm
R217	24366103	CF, 10k ohm
R218	24366101	CF, 100 ohm
R220	24366152	CF, 1500 ohm
R225	24366103	CF, 10k ohm

Location No.	Part No.	Description
R226	24366332	CF, 3300 ohm
R227	24366102	CF, 1k ohm
R228	24366224	CF, 240k ohm
R229	24366562	CF, 5600 ohm
R230	24366222	CF, 2200 ohm
R231(U901)	24380910	CF, 91 ohm, 1/8W
R231(U902A)	24366101	CF, 100 ohm
R232(U901)	24380101	CF, 100 ohm, 1/8W
R232(U902A)	24366221	CF, 220 ohm
R238	24366103	CF, 10k ohm
R241	24366154	CF, 150k ohm
⚠ R248	24552391	OMF, 390 ohm, 1/2W
R249	24366101	CF, 100 ohm
R255	24061609	VR, 5k ohm, 1/10W
R256	24063816	VR, 10k ohm, 0.08W
R257	24069929	VR, 10k ohm, 0.08W
R301	24366561	CF, 560 ohm
R302	24366564	CF, 560k ohm
R303	24890225	CF, 2.2M ohm, 1/4W
R304	24366103	CF, 10k ohm
R306	24366681	CF, 680 ohm
R307	24366563	CF, 56k ohm
R308	24366393	CF, 39k ohm
R309	24366224	CF, 220k ohm
R310	24946825	CC, 8.2M ohm, ±10%, 1/2W
R316	24366334	CF, 330k ohm
⚠ R317	24552102	OMF, 1k ohm, 1/2W
R319	24366182	CF, 1800 ohm
R320	24366102	CF, 1k ohm
⚠ R321	24552222	OMF, 2200 ohm, 1/2W
⚠ R322	24553751	OMF, 750 ohm, 1W
⚠ R323	24983129	MF, 1.2 ohm, 1W
⚠ R327	24547829	FR, 8.2 ohm, 1W
⚠ R331	24552102	OMF, 1k ohm, 1/2W
⚠ R332	24552102	OMF, 1k ohm, 1/2W
R333	24366331	CF, 330 ohm
R351	24066948	VR, 200k ohm, 1/10W
R352	24061606	VR, 50k ohm, 1/10W
R381	24366272	CF, 2700 ohm
R382	24366823	CF, 82k ohm
R401	24366391	CF, 390 ohm
R402	24366103	CF, 10k ohm
R403	24366332	CF, 3300 ohm
R404	24366222	CF, 2200 ohm
R405	24366333	CF, 33k ohm
R406	24366154	CF, 150k ohm
⚠ R407	24552221	OMF, 220 ohm, 1/2W
R408	24366182	CF, 1800 ohm
⚠ R409	24552121	OMF, 120 ohm, 1/2W
⚠ R410	24000947	OMF, 15k ohm, ±2%, 1/2W
R411	24366330	CF, 33 ohm
⚠ R416	24009992	OMF, 2k ohm, 3W
⚠ R420	24553102	OMF, 1k ohm, 1W
⚠ R421	24553751	OMF, 750 ohm, 1W
⚠ R425	24383562	OMF, 5600 ohm, 2W
R430	24366682	CF, 6800 ohm
⚠ R431	24552432	OMF, 4300 ohm, 1/2W
⚠ R440	24552103	OMF, 10k ohm, 1/2W
⚠ R441	24552103	OMF, 10k ohm, 1/2W
⚠ R444	24982109	MF, 1 ohm, 1/2W
⚠ R448	24000888	FR, 2 ohm, 1W

Location No.	Part No.	Description
R451	24066952	VR, 10k ohm, 1/10W
⚠ R461	24552181	OMF, 180 ohm, 1/2W
R482	24366103	CF, 10k ohm
R502	24366272	CF, 2700 ohm
R505	24366183	CF, 18k ohm
R506	24366182	CF, 1800 ohm
R509	24366391	CF, 390 ohm
R510	24366471	CF, 470 ohm
R511	24366223	CF, 22k ohm
R512	24366104	CF, 100k ohm
R513	24366103	CF, 10k ohm
R514	24366471	CF, 470 ohm
R515	24366821	CF, 820 ohm
R516	24366221	CF, 220 ohm
R517	24366823	CF, 82k ohm
R518	24366273	CF, 27k ohm
R519	24366273	CF, 27k ohm
R520	24366122	CF, 1200 ohm
R523	24366101	CF, 100 ohm
R524	24366272	CF, 2700 ohm
R527	24366101	CF, 100 ohm
R528	24366101	CF, 100 ohm
R530	24366101	CF, 100 ohm
⚠ R533	24553433	OMF, 43k ohm, 1W
⚠ R534	24553433	OMF, 43k ohm, 1W
⚠ R535	24553433	OMF, 43k ohm, 1W
R541	24890161	CF, 160 ohm, 1/4W
R542	24890161	CF, 160 ohm, 1/4W
R551	24066955	VR, 1k ohm, 1/10W
R555	24063816	VR, 10k ohm, 0.08W
R557	24061609	VR, 5k ohm, 1/10W
R558	24061609	VR, 5k ohm, 1/10W
R559	24061609	VR, 5k ohm, 1/10W
⚠ R591	24009974	OMF, 15k ohm, 2W
⚠ R592	24009974	OMF, 15k ohm, 2W
⚠ R593	24009974	OMF, 15k ohm, 2W
R602	24366222	CF, 2200 ohm
R603	24366133	CF, 13k ohm
R604	24366104	CF, 100k ohm
R605	24366332	CF, 3300 ohm
R607	24366153	CF, 15k ohm
R612	24366471	CF, 470 ohm
R614	24366332	CF, 3300 ohm
R617	24366682	CF, 6800 ohm
R618	24366153	CF, 15k ohm
R619	24366183	CF, 18k ohm
⚠ R623	24321479	OMF, 0.47 ohm, 1/2W
R624	24366334	CF, 330k ohm
⚠ R630	24322569	OMF, 5.6 ohm, 1W
R640	24366102	CF, 1k ohm
R642	24366562	CF, 5600 ohm
R644	24366682	CF, 6800 ohm
R645	24366562	CF, 5600 ohm
R646	24366562	CF, 5600 ohm
R647	24366562	CF, 5600 ohm
R648	24366562	CF, 5600 ohm
R649	24366272	CF, 2700 ohm
R651	24063814	VR, 50k ohm, 0.08W
R661	24946101	CC, 100 ohm, ±10%, 1/2W
R680	24366104	CF, 100k ohm
R682	24366472	CF, 4700 ohm

Location No.	Part No.	Description
R683	24366562	CF, 5600 ohm
R684	24366301	CF, 300 ohm
R685	24366333	CF, 33k ohm
R686	24366103	CF, 10k ohm
R687	24366183	CF, 18k ohm
R688	24366332	CF, 3300 ohm
R691	24366222	CF, 2200 ohm
R692	24366104	CF, 100k ohm
R693	24366102	CF, 1k ohm
⚠ R801	24007688	Cement, 6.2 ohm, 9W
⚠ R810	24000838	FR, 0.33 ohm, ±10%, 2W
⚠ R811	24553390	OMF, 39 ohm, 1W
R812	24366100	CF, 10 ohm
⚠ R815	24552180	OMF, 18 ohm, 1/2W
⚠ R816	24321828	OMF, 0.82 ohm, 1/2W
⚠ R817	24007942	Cement, 180 ohm, 5W
⚠ R819	24553362	OMF, 3600 ohm, 1W
⚠ R820	24553362	OMF, 3600 ohm, 1W
⚠ R822	24553513	OMF, 51k ohm, 1W
R823	24366122	CF, 1200 ohm
⚠ R824	24553513	OMF, 51k ohm, 1W
R825	24942104	CC, 100k ohm, 1/2W
⚠ R826	24552100	OMF, 10 ohm, 1/2W
R827	24366394	CF, 390k ohm
R828	24366682	CF, 6800 ohm
R829	24366821	CF, 820 ohm
⚠ R830	24982568	MF, 0.56 ohm, 1/2W
⚠ R831	24553561	OMF, 560 ohm, 1W
R832	24942104	CC, 100k ohm, 1/2W
⚠ R890	24000816	PTC Thermistor, Dual
R901	24946152	CC, 1500 ohm, ±10%, 1/2W
R902	24946152	CC, 1500 ohm, ±10%, 1/2W
R903	24946152	CC, 1500 ohm, ±10%, 1/2W
⚠ R920	24000906	FR, 2.4 ohm, 2W
⚠ RA01	24382163	OMF, 16k ohm, 1W
RA03	24366124	CF, 120k ohm
RA07	24366473	CF, 47k ohm
RA08	24366682	CF, 6800 ohm
RA09	24366332	CF, 3300 ohm
RA11	24366473	CF, 47k ohm
RA13	24366104	CF, 100k ohm
RA20	24366223	CF, 22k ohm
RA21	24366223	CF, 22k ohm
RA22	24366223	CF, 22k ohm
RA23	24366223	CF, 22k ohm
RA24	24366223	CF, 22k ohm
RA25	24366103	CF, 10k ohm
RA27	24366223	CF, 22k ohm
RA33	24366103	CF, 10k ohm
RA38	24366202	CF, 2k ohm
RA39	24366202	CF, 2k ohm
RA40	24366302	CF, 3000 ohm
RA41	24366302	CF, 3000 ohm
RA42	24366104	CF, 100k ohm
RA43	24366431	CF, 430 ohm
RA44	24366431	CF, 430 ohm
RA45	24366431	CF, 430 ohm
RA46	24366431	CF, 430 ohm
RA47	24366102	CF, 1k ohm
RA48	24366102	CF, 1k ohm
RA60	24366102	CF, 1k ohm

Location No.	Part No.	Description
RA61	24366102	CF, 1k ohm
RA62	24366102	CF, 1k ohm
RA63	24366102	CF, 1k ohm
RA64	24366562	CF, 5600 ohm
RA65	24366102	CF, 1k ohm
RA66	24366272	CF, 2700 ohm
RA67	24366103	CF, 10k ohm
RA68	24366103	CF, 10k ohm
RA69	24366103	CF, 10k ohm
RA70	24366333	CF, 33k ohm
RA72	24366333	CF, 33k ohm
RA73	24366623	CF, 62k ohm
RA76	24366562	CF, 5600 ohm
RA80	24366820	CF, 82 ohm
RA81	24366562	CF, 5600 ohm
RA82	24366273	CF, 27k ohm
RA83	24366754	CF, 750k ohm
RA84	24366561	CF, 560 ohm
RA85	24366132	CF, 1300 ohm
RA87	24366151	CF, 150 ohm
RA89	24366101	CF, 100 ohm
RA90	24366203	CF, 20k ohm
RA91	24366103	CF, 10k ohm
RA92	24366431	CF, 430 ohm
RA93	24366471	CF, 470 ohm
RA94	24366103	CF, 10k ohm
RA95	24366562	CF, 5600 ohm
RA96	24366472	CF, 4700 ohm
RA97	24366102	CF, 1k ohm
RA98	24366222	CF, 2200 ohm
RH03	24366682	CF, 6800 ohm
RH04	24366103	CF, 10k ohm
RH07	24366102	CF, 1k ohm
RH08	24366473	CF, 47k ohm
RH09	24366103	CF, 10k ohm
RH10	24366750	CF, 75 ohm
RH11	24366750	CF, 75 ohm
RH12	24366750	CF, 75 ohm
RH13	24366102	CF, 1k ohm
RH14	24366750	CF, 75 ohm
RH15	24366102	CF, 1k ohm
RH16	24366820	CF, 82 ohm
RH17	24366103	CF, 10k ohm
RH18	24366103	CF, 10k ohm
RH20	24366332	CF, 3300 ohm
RH23	24366682	CF, 6800 ohm
RH26	24366102	CF, 1k ohm
RH27	24366332	CF, 3300 ohm
RH28	24366332	CF, 3300 ohm
RH30	24366222	CF, 2200 ohm
RH31	24366103	CF, 10k ohm
RH32	24366223	CF, 22k ohm
RH33	24366332	CF, 3300 ohm
RH34	24366152	CF, 1500 ohm
RH35	24366912	CF, 9100 ohm
RH36	24366332	CF, 3300 ohm
RH37	24366103	CF, 10k ohm
RH38	24366103	CF, 10k ohm
RH39	24366182	CF, 1800 ohm
RH40	24366272	CF, 2700 ohm
RH41	24366822	CF, 8200 ohm

Location No.	Part No.	Description
⚠ RH42	24552561	OMF, 560 ohm, 1/2W
RH43	24366153	CF, 15k ohm
RH51	24066913	VR, 10k ohm, 1/10W
RH52	24066913	VR, 10k ohm, 1/10W
RH53	24066911	VR, 50k ohm, 1/10W
RH54	24069814	VR, 5k ohm, 0.08W
RH60	24366682	CF, 6800 ohm
RH61	24366472	CF, 4700 ohm
RH62	24366103	CF, 10k ohm
RH63	24366103	CF, 10k ohm
RH65	24366102	CF, 1k ohm
RH67	24366221	CF, 220 ohm
RH68	24366223	CF, 22k ohm
RH69	24366101	CF, 100 ohm
RH70	24366103	CF, 10k ohm
⚠ RH71	24552680	OMF, 68 ohm, 1/2W
⚠ RH72	24552271	OMF, 270 ohm, 1/2W
RH73	24366562	CF, 5600 ohm
RH74	24366121	CF, 120 ohm
RH75	24366121	CF, 120 ohm
RH76	24366121	CF, 120 ohm
RH83	24366221	CF, 220 ohm
RH84	24366221	CF, 220 ohm
RH85	24366221	CF, 220 ohm
RH90	24366750	CF, 75 ohm
RK01	24366223	CF, 22k ohm
RK02	24366103	CF, 10k ohm
RK03	24366220	CF, 22 ohm
RK04	24366222	CF, 2200 ohm
RM03	24366104	CF, 100k ohm
RM08	24366103	CF, 10k ohm
RM11	24366332	CF, 3300 ohm
RM12	24366151	CF, 150 ohm
RM13	24366332	CF, 3300 ohm
RM14	24366151	CF, 150 ohm
RM15	24366332	CF, 3300 ohm
RM16	24366151	CF, 150 ohm
RM18	24366122	CF, 1200 ohm
RM20	24366104	CF, 100k ohm
RM21	24366473	CF, 47k ohm
RM22	24366152	CF, 1500 ohm
RM23	24366182	CF, 1800 ohm
RM24	24366332	CF, 3300 ohm
RM25	24366681	CF, 680 ohm
RM26	24366391	CF, 390 ohm
RM27	24366152	CF, 1500 ohm
RM28	24366182	CF, 1800 ohm
RM29	24366332	CF, 3300 ohm
RM30	24366331	CF, 330 ohm
RM32	24546569	FR, 5.6 ohm, 1/2W
RM34	24366681	CF, 680 ohm
RM35	24366272	CF, 2700 ohm
RM36	24366563	CF, 56k ohm
RM40	24366392	CF, 3900 ohm
RM65	24366223	CF, 22k ohm
RM66	24366103	CF, 10k ohm
RM70	24366391	CF, 390 ohm
RM71	24366271	CF, 270 ohm
RM72	24366471	CF, 470 ohm
RM73	24366393	CF, 39k ohm
RM74	24366391	CF, 390 ohm

Location No.	Part No.	Description
RM75	24366222	CF, 2200 ohm
RM76	24366103	CF, 10k ohm
RM77	24366222	CF, 2200 ohm
RM80	24366103	CF, 10k ohm
RM81	24366332	CF, 3300 ohm
RM82	24366472	CF, 4700 ohm
RM83	24366562	CF, 5600 ohm
RM84	24366562	CF, 5600 ohm
RR45	24366472	CF, 4700 ohm
RR46	24366392	CF, 3900 ohm
RR65	24366104	CF, 100k ohm
RR75	24366472	CF, 4700 ohm
RR76	24366272	CF, 2700 ohm
RR80	24366471	CF, 470 ohm
RR81	24366101	CF, 100 ohm
⚠ RS03	24552112	OMF, 1100 ohm, 1/2W
⚠ RS06	24322478	OMF, 0.47 ohm, 1W
RS07	24366102	CF, 1k ohm

COILS & TRANSFORMERS

L102	23262856	Coil, PIF, TRF1452
L103	23262881	Coil, AFT, TRF1445
L105	23237993	Coil, Peaking, TRF4339AC
L106	23261051	Coil, RF Choke, AZ9246E
L107	23262961	Coil, PIF Trap, TRF1411
L108	23262843	Coil, PIF Trap, TRF1457
L161	23262951	Coil, RF Choke, TRF1019
L162	23261986	Coil, RF Choke, TRF9220
L171	23262881	Coil, AFT, TRF1445
L201	23237987	Coil, Peaking, TRF4100AC
L406	23103940	Coil (Ferrite Bead), M2001
L407	23238934	Coil, Peaking, TRF4109AC
L410	23221026	Coil, RF Choke, AZ9004Y
L411	23222660	Coil, Linearity, TLN2069
⚠ L462	23227484	Coil, Deflection, AT1635/20
L501	23237982	Coil, Peaking, TRF4270AC
L502	23237985	Coil, Peaking, TRF4150AC
L503	23237973	Coil, Peaking, TRF4151AC
L551	23250972	Coil, 1H–Delay Matching, TRF5418
L552	23250972	Coil, 1H–Delay Matching, TRF5418
L601	23237986	Coil, Peaking, TRF4120AC
L602	23252198	Coil, SIF–2, TRF6702G
L661	23221058	Coil, RF Choke, TLN1015C
L662	23221058	Coil, RF Choke, TLN1015C
L801	23221075	Coil, RF Choke, TLN1015Q
L803	23103940	Coil (Ferrite Bead), M2001
L804	23103961	Coil, Choke, ZBF253D–01
L830	23261975	Coil, Choke, TRF9229
L831	23221060	Coil, RF Choke, TLN1015E
L832	23221060	Coil, RF Choke, TLN1015E
⚠ L901	23200786	Coil, Degaussing, Type 51850
LA11	23237999	Coil, Peaking, TRF4109AC
LH01	23221058	Coil, RF Choke, TLN1015C
LH02	23221058	Coil, RF Choke, TLN1015C
LH04	23237975	Coil, Peaking, TRF4101AC
LK01	23232963	Coil, Variable, TRF3055
LK02	23238722	Coil, Peaking, TRF4822AI

Location No.	Part No.	Description
LM51	23262797	Coil, IF Coil, TRF1093
LM52	23262798	Coil, IF Coil, TRF1092
LM53	23262798	Coil, IF Coil, TRF1092
LM54	23262798	Coil, IF Coil, TRF1092
LM56	23237894	Coil, Peaking, TRF4472AE
LM57	23237988	Coil, Peaking, TRF4829AC
LM58	23237988	Coil, Peaking, TRF4829AC
⚠ T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠ T461	23226408	Transformer, Flyback, TFB4032AD
T801	23211967	Line Filter, TRF3113
⚠ T802	23213752	Transformer, Converter, TPW3060
⚠ T803	24213698	Transformer, Remote Power, TPW1262B

SEMICONDUCTORS

IC101	B0356804	IC, TA7680AP
IC303	23119533	IC, TDA3651A
IC501	B0357050	IC, TA7699AP
IC620	23119458	IC, TDA1524A
IC621	23119532	IC, TDA1015
IC801	23119487	IC, SI−1800D
ICA11	23119178	IC, TMP47C432N−8896
ICA11	or 23119304	IC, TMP47C432N−8895
ICA12	23119363	IC, M58653P
ICA13	B0272490	IC, TD6350P
ICH01	B0358000	IC, TA7750P
ICH02	23119723	IC, AN5352
ICK01	23119566	IC, μPC1474HA
ICM01	23119724	IC, M51397AP
Q161	A6708871	Transistor, 2SC388ATM
Q201	23114691	Transistor, BC557A
Q205	23114689	Transistor, BC547A
Q207	23114689	Transistor, BC547A
Q208	23114689	Transistor, BC547A
Q302	23114691	Transistor, BC557A
Q402	A6330004	Transistor, 2SC2482 FA−1
⚠ Q404	A6868654	Transistor, 2SD1426
Q482	23114689	Transistor, BC547A
Q505	23114693	Transistor, BF871
Q506	A6330000	Transistor, 2SC2482
Q507	23114693	Transistor, BF871
Q508	A6330000	Transistor, 2SC2482
Q509	23114693	Transistor, BF871
Q510	A6330000	Transistor, 2SC2482
Q622	23114632	Transistor, BC547B
Q680	23114689	Transistor, BC547A
Q681	23114689	Transistor, BC547A
Q682	23114691	Transistor, BC557A
Q683	23114691	Transistor, BC557A
Q802	23314018	Transistor, 2SC3678
Q803	23118980	Transistor, BC337
QA01	23114632	Transistor, BC547B
QA02	23114689	Transistor, BC547A
QA03	23114691	Transistor, BC557A
QA04	23114691	Transistor, BC557A
QA05	23114691	Transistor, BC557A
QA14	23114691	Transistor, BC557A
QA15	23114691	Transistor, BC557A

Location No.	Part No.	Description
QA16	23114689	Transistor, BC547A
QA17	23114689	Transistor, BC547A
QA18	23114689	Transistor, BC547A
QA19	23114691	Transistor, BC557A
QA20	23114689	Transistor, BC547A
QA21	23114691	Transistor, BC557A
QH06	23114632	Transistor, BC547B
QH08	23114689	Transistor, BC547A
QH10	23114691	Transistor, BC557A
QH11	23114691	Transistor, BC557A
QH12	23114689	Transistor, BC547A
QH13	23114691	Transistor, BC557A
QH14	23114689	Transistor, BC547A
QH15	23114688	Transistor, BC327
QM08	23114689	Transistor, BC547A
QM12	23114691	Transistor, BC557A
QM13	23114689	Transistor, BC547A
QR41	23114689	Transistor, BC547A
QR42	23114691	Transistor, BC557A
QR62	23114546	Transistor, BC557B
QR71	23114689	Transistor, BC547A
QR72	23114691	Transistor, BC557A
QS02	23118981	Transistor, BD202
QS03	23114632	Transistor, BC547B
QS04	23114546	Transistor, BC557B
D202	23115599	Diode, 1N4148
D203	23115599	Diode, 1N4148
D204	23115599	Diode, 1N4148
D205	23115599	Diode, 1N4148
D212	23115599	Diode, 1N4148
D213	A7150041	Diode, 1SS104
D214	23115599	Diode, 1N4148
D241	23115599	Diode, 1N4148
D242	23115599	Diode, 1N4148
D243	A7150041	Diode, 1SS104
D244	23115599	Diode, 1N4148
D301	23115599	Diode, 1N4148
D302	23118479	Diode, BYD33J
D305	23118479	Diode, BYD33J
D309	23115598	Diode, 1N4003
D315	A7110160	Diode, Zener, 05Z7.5Y
D371	A7110040	Diode, Zener, 05Z5.1X
D406	23118479	Diode, BYD33J
D408	23118479	Diode, BYD33J
D415	23115599	Diode, 1N4148
D416	A7110312	Diode, Zener, 05Z10Y
D421	23118479	Diode, BYD33J
D422	A7110509	Diode, Zener, 05Z15Y
D423	A7110509	Diode, Zener, 05Z15Y
D481	23115599	Diode, 1N4148
D482	23115599	Diode, 1N4148
D591	23115599	Diode, 1N4148
D592	23115599	Diode, 1N4148
D593	23115599	Diode, 1N4148
D681	23115599	Diode, 1N4148
D682	23115599	Diode, 1N4148
D801	A7568410	Diode, TVR−4J
D802	A7568410	Diode, TVR−4J
D803	A7568410	Diode, TVR−4J
D804	A7568410	Diode, TVR−4J
D810	23118479	Diode, BYD33J

Location No.	Part No.	Description
LM51	23262797	Coil, IF Coil, TRF1093
LM52	23262798	Coil, IF Coil, TRF1092
LM53	23262798	Coil, IF Coil, TRF1092
LM54	23262798	Coil, IF Coil, TRF1092
LM56	23237894	Coil, Peaking, TRF4472AE
LM57	23237988	Coil, Peaking, TRF4829AC
LM58	23237988	Coil, Peaking, TRF4829AC
⚠ T401	23224983	Transformer, Horiz. Drive, TLN1039
⚠ T461	23226408	Transformer, Flyback, TFB4032AD
T801	23211967	Line Filter, TRF3113
⚠ T802	23213752	Transformer, Converter, TPW3060
⚠ T803	24213698	Transformer, Remote Power, TPW1262B

SEMICONDUCTORS

IC101	B0356804	IC, TA7680AP
IC303	23119533	IC, TDA3651A
IC501	B0357050	IC, TA7699AP
IC620	23119458	IC, TDA1524A
IC621	23119532	IC, TDA1015
IC801	23119487	IC, SI-1800D
ICA11	23119178	IC, TMP47C432N-8896
ICA11	or 23119304	IC, TMP47C432N-8895
ICA12	23119363	IC, M58653P
ICA13	B0272490	IC, TD6350P
ICH01	B0358000	IC, TA7750P
ICH02	23119723	IC, AN5352
ICK01	23119566	IC, μPC1474HA
ICM01	23119724	IC, M51397AP
Q161	A6708871	Transistor, 2SC388ATM
Q201	23114691	Transistor, BC557A
Q205	23114689	Transistor, BC547A
Q207	23114689	Transistor, BC547A
Q208	23114689	Transistor, BC547A
Q302	23114691	Transistor, BC557A
Q402	A6330004	Transistor, 2SC2482 FA-1
⚠ Q404	A6868654	Transistor, 2SD1426
Q482	23114689	Transistor, BC547A
Q505	23114693	Transistor, BF871
Q506	A6330000	Transistor, 2SC2482
Q507	23114693	Transistor, BF871
Q508	A6330000	Transistor, 2SC2482
Q509	23114693	Transistor, BF871
Q510	A6330000	Transistor, 2SC2482
Q622	23114632	Transistor, BC547B
Q680	23114689	Transistor, BC547A
Q681	23114689	Transistor, BC547A
Q682	23114691	Transistor, BC557A
Q683	23114691	Transistor, BC557A
Q802	23314018	Transistor, 2SC3678
Q803	23118980	Transistor, BC337
QA01	23114632	Transistor, BC547B
QA02	23114689	Transistor, BC547A
QA03	23114691	Transistor, BC557A
QA04	23114691	Transistor, BC557A
QA05	23114691	Transistor, BC557A
QA14	23114691	Transistor, BC557A
QA15	23114691	Transistor, BC557A

Location No.	Part No.	Description
QA16	23114689	Transistor, BC547A
QA17	23114689	Transistor, BC547A
QA18	23114689	Transistor, BC547A
QA19	23114691	Transistor, BC557A
QA20	23114689	Transistor, BC547A
QA21	23114691	Transistor, BC557A
QH06	23114632	Transistor, BC547B
QH08	23114689	Transistor, BC547A
QH10	23114691	Transistor, BC557A
QH11	23114691	Transistor, BC557A
QH12	23114689	Transistor, BC547A
QH13	23114691	Transistor, BC557A
QH14	23114689	Transistor, BC547A
QH15	23114688	Transistor, BC327
QM08	23114689	Transistor, BC547A
QM12	23114691	Transistor, BC557A
QM13	23114689	Transistor, BC547A
QR41	23114689	Transistor, BC547A
QR42	23114691	Transistor, BC557A
QR62	23114546	Transistor, BC557B
QR71	23114689	Transistor, BC547A
QR72	23114691	Transistor, BC557A
QS02	23118981	Transistor, BD202
QS03	23114632	Transistor, BC547B
QS04	23114546	Transistor, BC557B
D202	23115599	Diode, 1N4148
D203	23115599	Diode, 1N4148
D204	23115599	Diode, 1N4148
D205	23115599	Diode, 1N4148
D212	23115599	Diode, 1N4148
D213	A7150041	Diode, 1SS104
D214	23115599	Diode, 1N4148
D241	23115599	Diode, 1N4148
D242	23115599	Diode, 1N4148
D243	A7150041	Diode, 1SS104
D244	23115599	Diode, 1N4148
D301	23115599	Diode, 1N4148
D302	23118479	Diode, BYD33J
D305	23118479	Diode, BYD33J
D309	23115598	Diode, 1N4003
D315	A7110160	Diode, Zener, 05Z7.5Y
D371	A7110040	Diode, Zener, 05Z5.1X
D406	23118479	Diode, BYD33J
D408	23118479	Diode, BYD33J
D415	23115599	Diode, 1N4148
D416	A7110312	Diode, Zener, 05Z10Y
D421	23118479	Diode, BYD33J
D422	A7110509	Diode, Zener, 05Z15Y
D423	A7110509	Diode, Zener, 05Z15Y
D481	23115599	Diode, 1N4148
D482	23115599	Diode, 1N4148
D591	23115599	Diode, 1N4148
D592	23115599	Diode, 1N4148
D593	23115599	Diode, 1N4148
D681	23115599	Diode, 1N4148
D682	23115599	Diode, 1N4148
D801	A7568410	Diode, TVR-4J
D802	A7568410	Diode, TVR-4J
D803	A7568410	Diode, TVR-4J
D804	A7568410	Diode, TVR-4J
D810	23118479	Diode, BYD33J

Location No.	Part No.	Description
D811	23118479	Diode, BYD33J
D812	23118479	Diode, BYD33J
D813	23118479	Diode, BYD33J
D814	23118479	Diode, BYD33J
D815	23115599	Diode, 1N4148
D816	23115599	Diode, 1N4148
D817	23118804	Diode, Zener, RD6.2EN1
D817	or A7110075	Diode, Zener, 05Z6.2X
D818	23115599	Diode, 1N4148
D819	23115599	Diode, 1N4148
D820	23115599	Diode, 1N4148
D822	23118479	Diode, BYD33J
D830	A7580665	Diode, 3JH61 FA−1
D831	23118479	Diode, BYD33J
DA03	23115599	Diode, 1N4148
DA04	23115599	Diode, 1N4148
DA05	23115878	Diode, Zener, μPC574JC
DA05	or 23115922	Diode, Zener, μPC574J
DA10	23115599	Diode, 1N4148
DA11	23115599	Diode, 1N4148
DA14	23115599	Diode, 1N4148
DA15	23115599	Diode, 1N4148
DA16	23115599	Diode, 1N4148
DA19	23115599	Diode, 1N4148
DA22	23115599	Diode, 1N4148
DA24	23115599	Diode, 1N4148
DA25	23115599	Diode, 1N4148
DA26	23115599	Diode, 1N4148
DA91	A8626050	Diode (LED), TLG321, Green
DE02	23115599	Diode, 1N4148
DH01	23115599	Diode, 1N4148
DH04	23115599	Diode, 1N4148
DH05	A7288601	Diode, 1S2186 FA−1
DH06	23115599	Diode, 1N4148
DH07	23115535	Diode, OA91
DH08	23115599	Diode, 1N4148
DH09	23115599	Diode, 1N4148
DH10	23115599	Diode, 1N4148
DH11	23115599	Diode, 1N4148
DH12	23115599	Diode, 1N4148
DK01	23118482	Diode, BPW41N
DM01	23115599	Diode, 1N4148
DM02	23115599	Diode, 1N4148
DM05	23115525	Diode, Zener, BZX79B12
DM06	23115599	Diode, 1N4148
DM07	23115599	Diode, 1N4148
DM08	23115599	Diode, 1N4148
DM21	23115599	Diode, 1N4148
DR10	A8641942	Photo Coupler, TLP631 (GB)
DR41	23115599	Diode, 1N4148
DR71	23115599	Diode, 1N4148
DR90	23118969	Diode (LED), MV57124, Red
DR91	23118968	Diode (LED), MV54124, Green
DS05	23115598	Diode, 1N4003
DS06	23115598	Diode, 1N4003
DS07	23115598	Diode, 1N4003
DS08	23115598	Diode, 1N4003
DS10	23115526	Diode, Zener, BZX79B5V1

MISCELLANEOUS

⚠ F801	23144896	Fuse, T2.0A
F801A	23845691	Fuse Clip

Location No.	Part No.	Description
K902	23120771	Remote Hand Unit, CT9134
⚠ P001	23142640	Aerial Terminal, AT909S
P552	23164786	Plug 6P
P661	23163496	Jack, Earphone
P661A	23740030	Nut
⚠ P801	23176827	Cable, Twin
PH01	23116335	Socket, 21Pin
S202	23145579	Switch, Push, 2C2P
⚠ S801	23145601	Switch, Push, 2C1P
SA01	23145580	Switch, Push
SA02	23145580	Switch, Push
SA03	23145580	Switch, Push
SA04	23145580	Switch, Push
SA05	23145580	Switch, Push
SA06	23145580	Switch, Push
SA07	23145580	Switch, Push
⚠ V901A	23901874	Soket, CRT, 8P
W201	23250937	Coil, Delay Line, TRF2054
W661	23151348	Speaker, 77mm Round, 16 ohm, SPK1162
X501	23153962	Crystal, 4.43MHz
X502	23250949	Delay Line, PAL CHROMA, DL701
XA01	23153949	Ceramic Resonator, 4MHz, TCR1003
XA02	23153947	Crystal, 4MHz
XM01	23250950	Delay Line, F−SECAM, DL711
Z101	A5611192	PIF SAW Filter, F1037C
Z201	23107915	Ceramic Video Trap, 5.5 to 5.74MHz, TCF1017
Z202	23107913	Ceramic Video Trap, 6.5MHz, TCF1018
Z601	23107931	Ceramic Filter, 5.5MHz, TCF1007

PC BOARD ASSEMBLIES

U501	23331816	SECAM CHROMA Board, PW5425
U901	23331208	CRT DRIVE Board, PW5082
U902A	23331815	MAIN Board, PW5424
UA01	23331523	RMT/SELECTOR Board, PW5254
UH01A	23331209	21PIN CONNECTER Board, PW5083−1
UH01B	23331210	LED Board, PW5083−2
UH01C	23331211	EAR PHONE Board, PW5083−3
UK01	23158254	IR AMP Board, PW4170

PICTURE TUBE

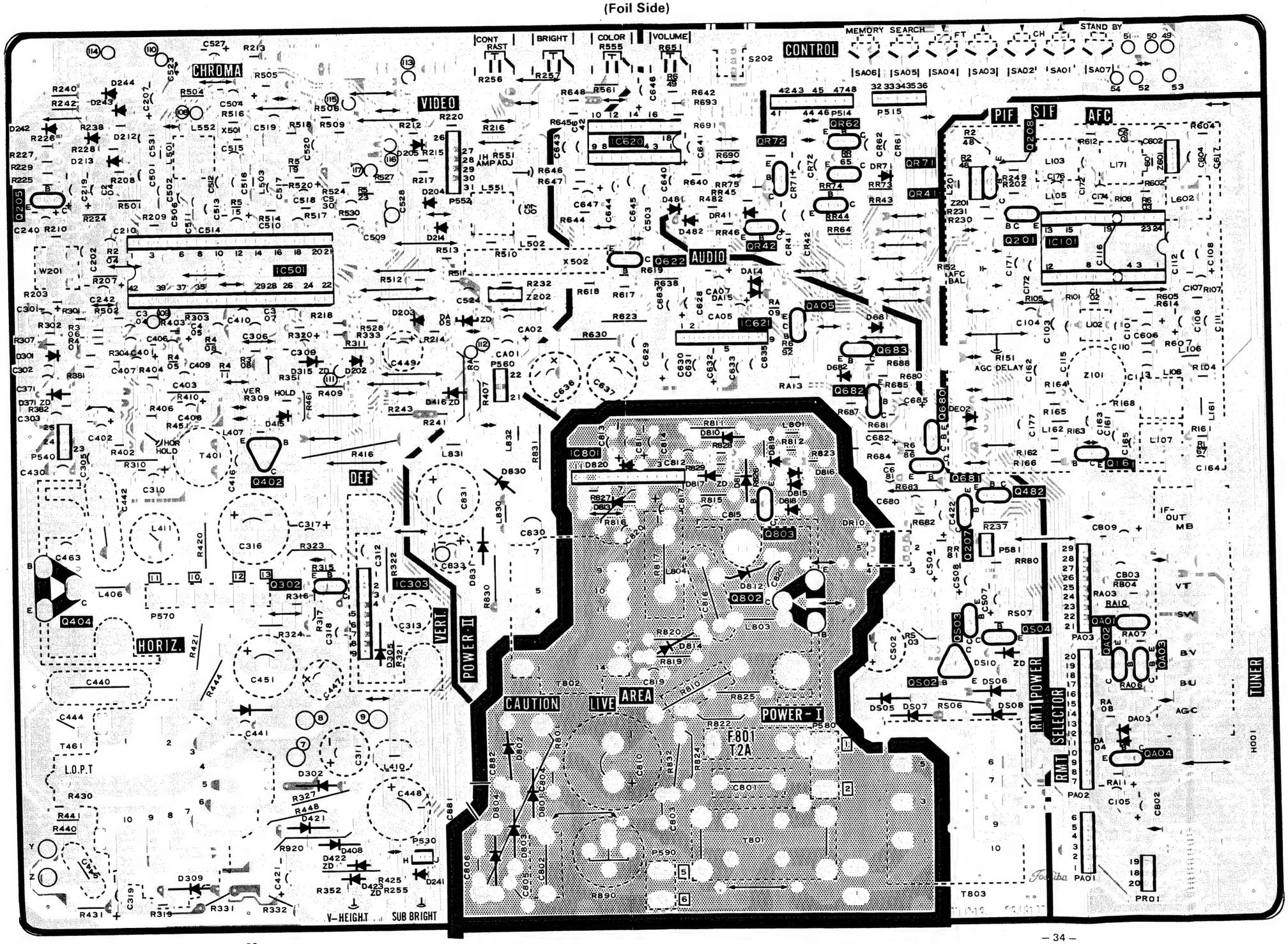
⚠ V901	23112412	Picture Tube, A38EAC00X03

TUNER

H001	23121774	Tuner, VHF/UHF, EG613F

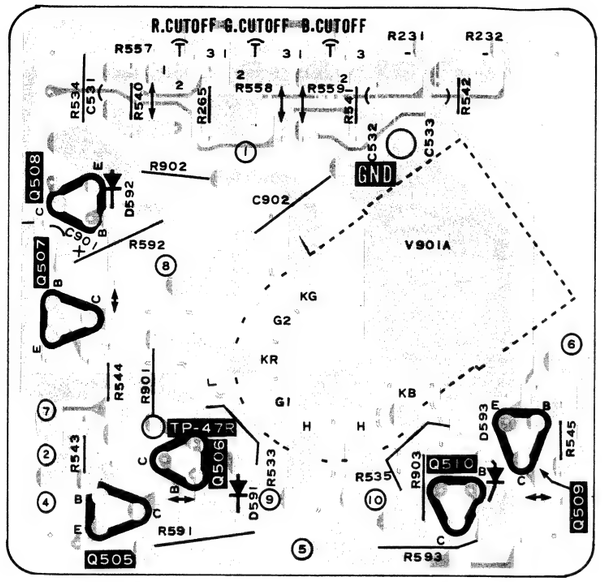
MAIN BOARD PW5424

(Foil Side)



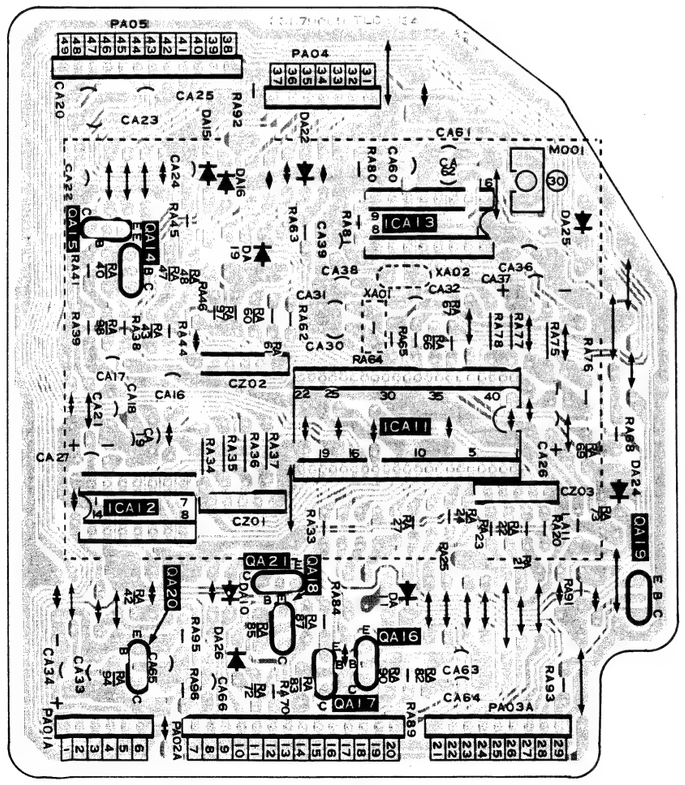
CRT DRIVE BOARD PW5082

(Foil Side)



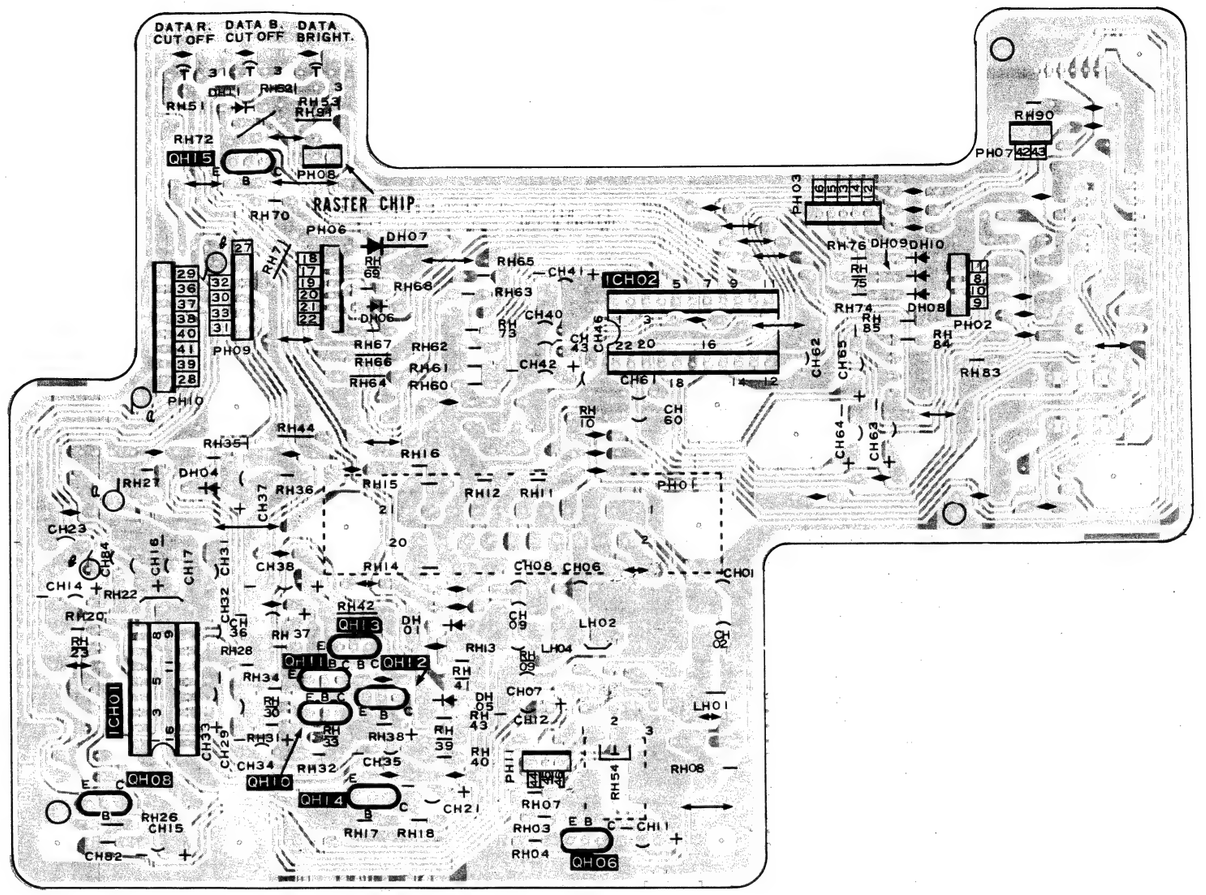
RMT SELECTOR BOARD PW5254

(Foil Side)



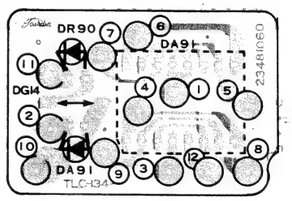
21 PIN CONNECTOR BOARD PW5083-1

(Foil Side)



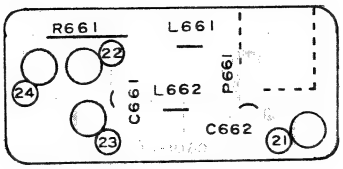
LED BOARD PW5083-2

(Foil Side)



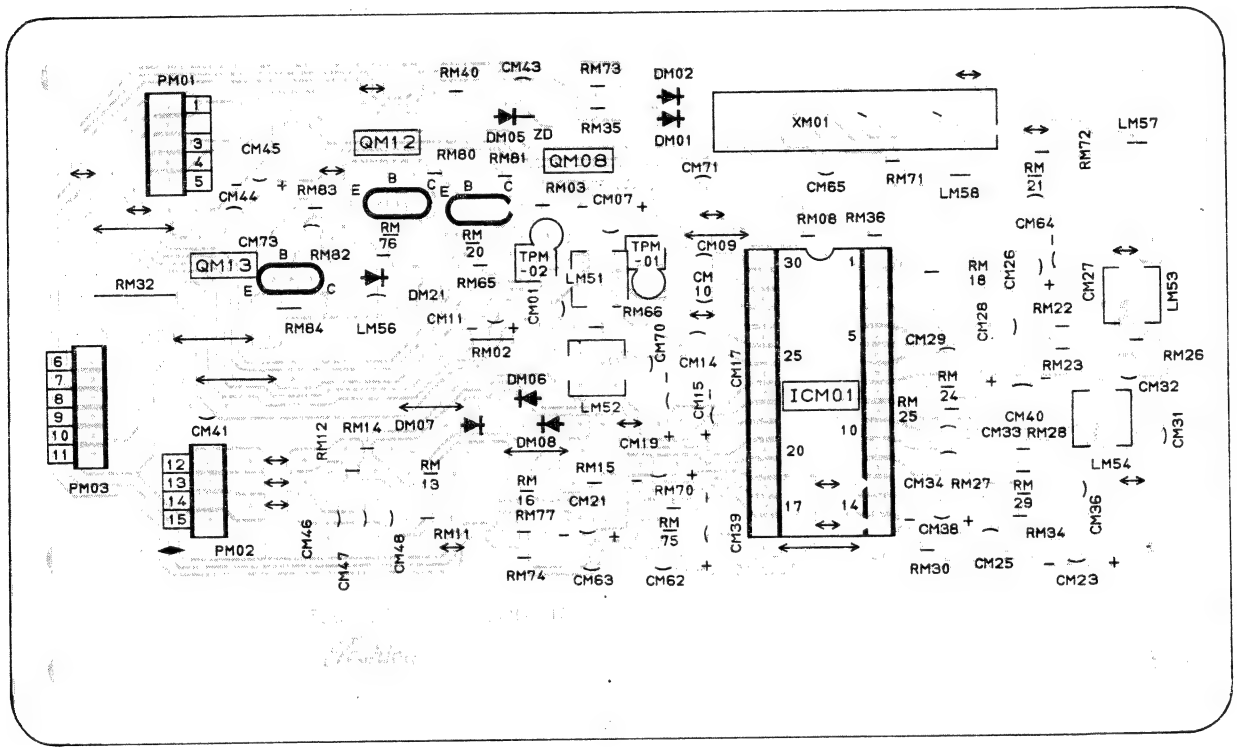
EARPHONE BOARD PW5083-3

(Foil Side)



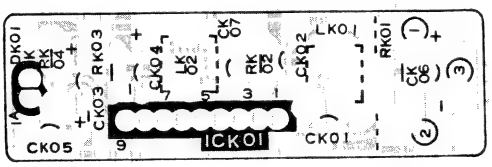
SECAM CHROMA BOARD PW5425

(Foil Side)



IR AMP BOARD PW4170

(Foil Side)

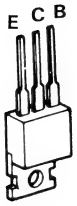


TERMINAL VIEW OF TRANSISTOR

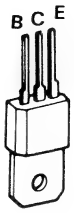
① BC237
BC337
BC547A
BC547B
BC547C
BC557A
BC557B
BF324

② 2SC388ATM

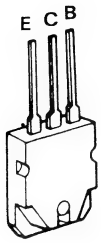
③ BD202



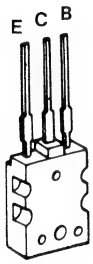
④ BF871



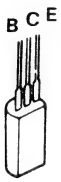
⑤ 2SC3678



⑥ 2SD1426



⑦ 2SC2482



160F5WD

SCHEMATIC DIAGRAM (1/2)

IMPORTANT SAFETY NOTICE

Component marked with the International Hazard Symbol must, if changed, be replaced by an approved type and must be mounted as the original. This will ensure that the safety standards adhered to during manufacture will be maintained following any servicing procedure.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltage readings were obtained using a high impedance digital voltmeter.
2. (—) or ground lead of instruments should be connected to the ground marked (⊥) in the schematic on checking Non isolated circuit but should be connected to the points marked (⏚) on checking isolated circuit surrounded by mark - - - -.
3. The voltage readings may vary as much as ±20%.
4. Check that the Tuning, A.F.C, Brightness, Contrast and Colour controls are adjusted for the best picture, making sure that the Contrast and Colour controls are set near to their mid-positions and the Brightness control is set at Center-click position.
5. The waveforms were taken using a standard colour bar signal and were observed using a wide band oscilloscope via a low capacity probe.
6. Voltage readings in 21 PIN CONNECTOR Board are measured with S202 selected in the TV mode, unless otherwise noted.

NOTES:

1. This circuit diagram is subject to change without notice.

EXPRESSION

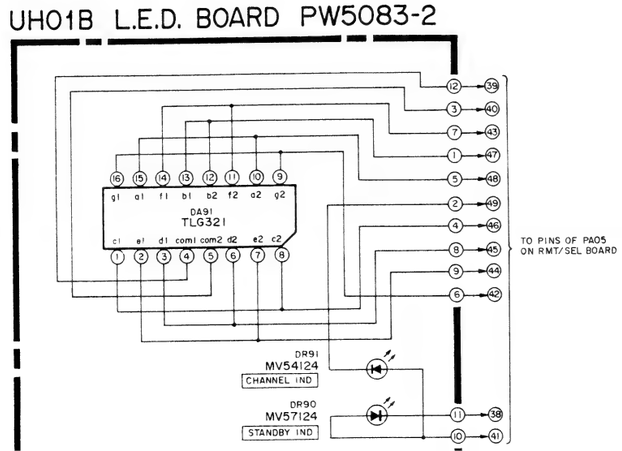
VALUE OF RESISTOR, CAPACITOR and INDUCTOR

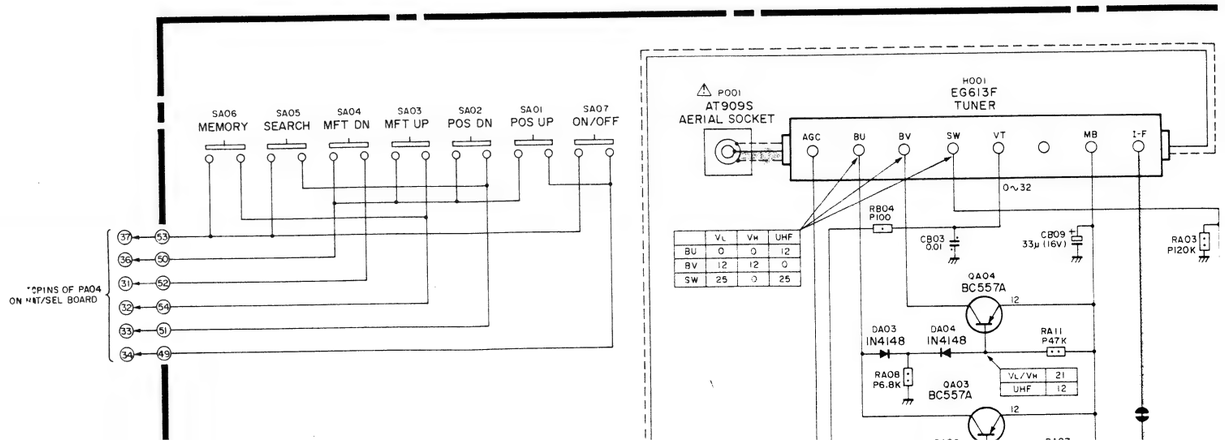
1. Resistance is shown in ohm, k=1,000, M=1,000,000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.

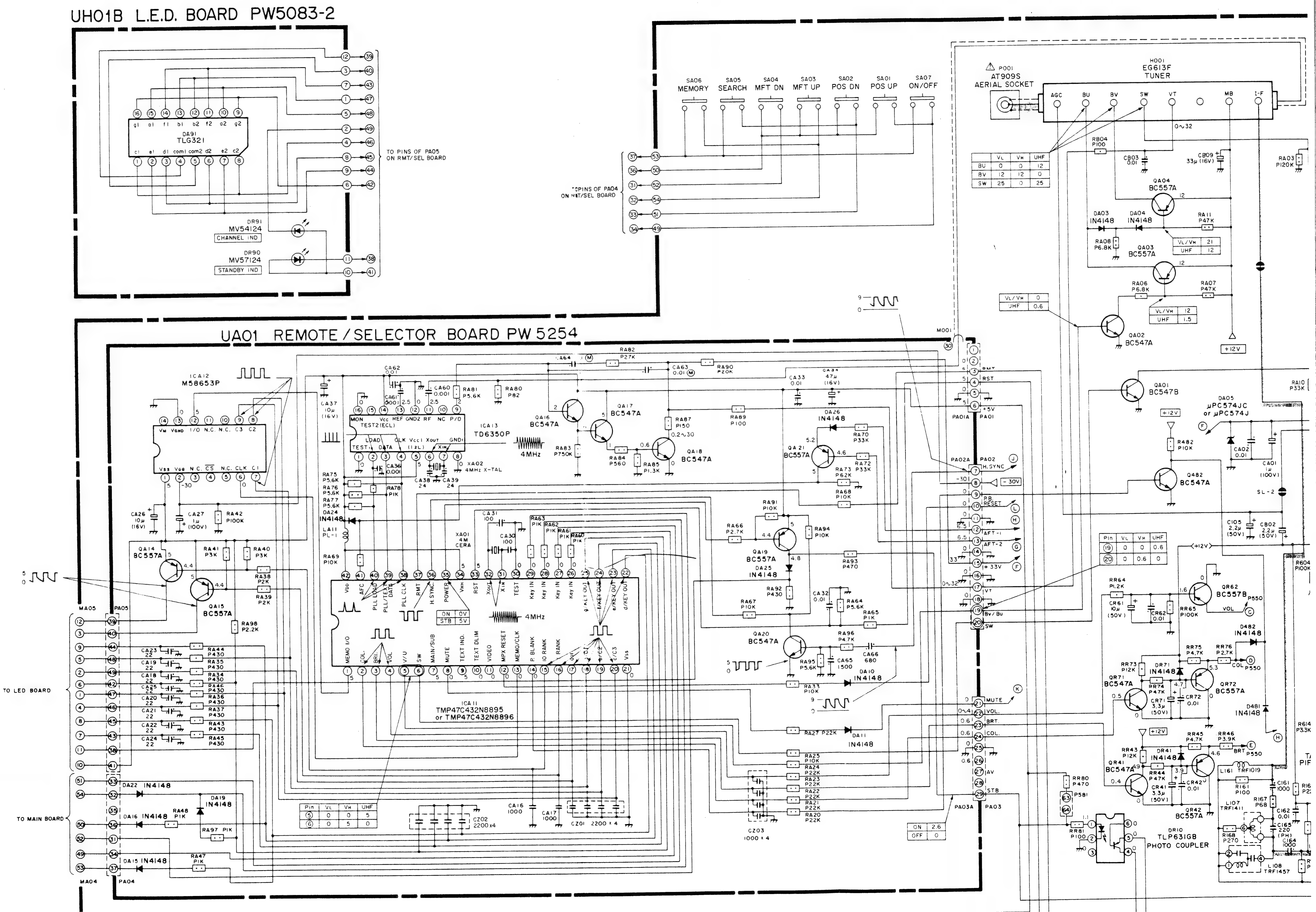
GROUNDING SYMBOL

1. ⊥: Non isolated ground, ⏚ : Isolated ground.

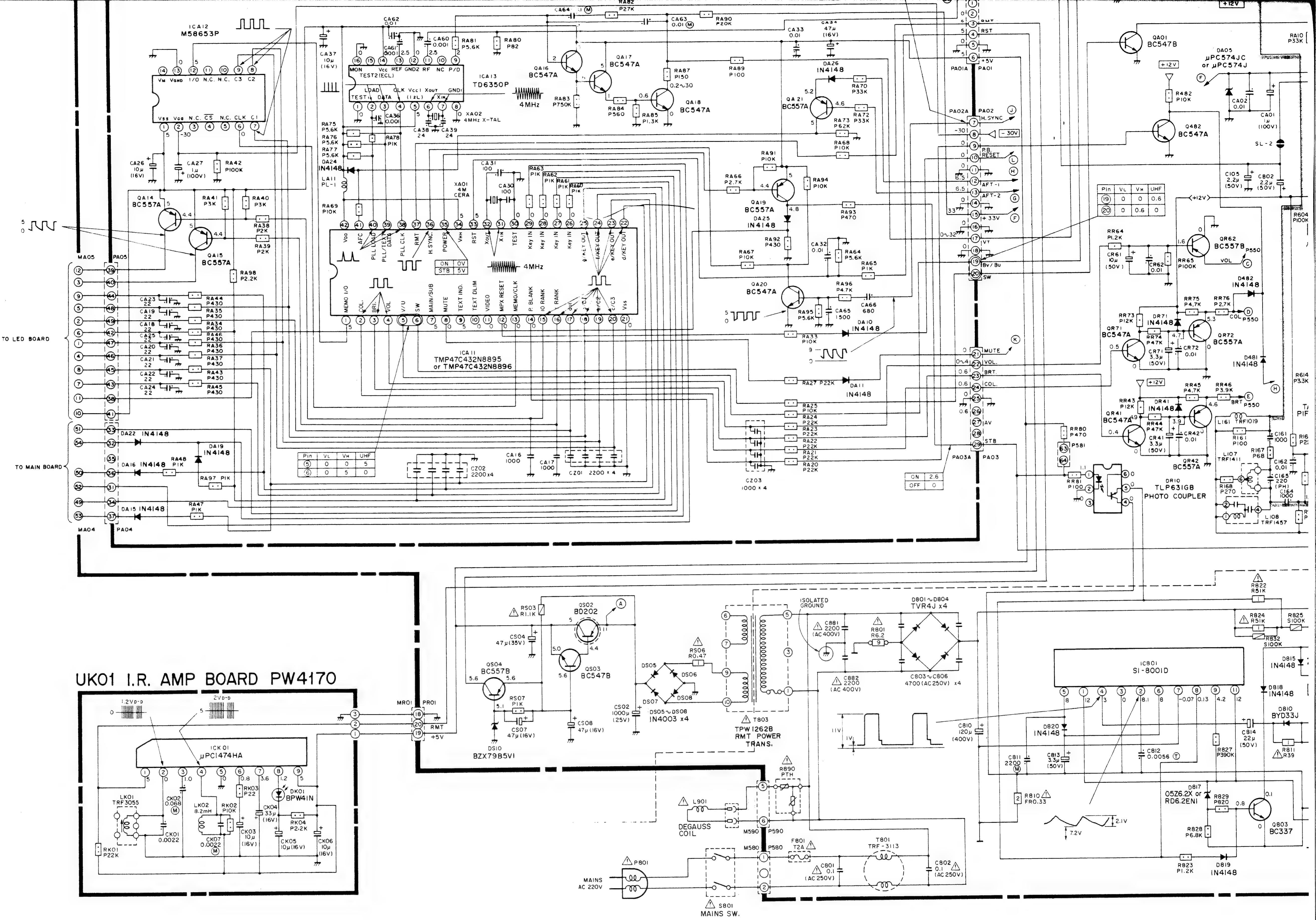
UH01B L.E.D. BOARD PW5083-2







UH01B L.E.D. BOARD PW5083-2
DA91
TLG321
DR91
MV54124
CHANNEL IND
DR90
MV57124
STANDBY IND
TO PINS OF PA05 ON RMT/SEL BOARD
TO PINS OF PA04 ON RMT/SEL BOARD
SA06 MEMORY
SA05 SEARCH
SA04 MFT DN
SA03 MFT UP
SA02 POS DN
SA01 POS UP
SA07 ON/OFF
P001
AT909S
AERIAL SOCKET
H001
EG613F
TUNER
AGC
BU
BV
SW
VT
MB
I-F
QA04
BC557A
QA03
BC557A
QA02
BC547A
QA01
BC547B
DA03
IN4148
DA04
IN4148
+12V
M001
DA05
μPC574JC
or μPC574J
UA01 REMOTE / SELECTOR BOARD PW 5254
ICA12
M58653P
ICA13
TD6350P
4MHz
XA02
4MHz X-TAL
XA01
4M
CERA
QA16
BC547A
QA17
BC547A
QA18
BC547A
QA21
BC557A
QA19
BC557A
QA20
BC547A
QA14
BC557A
QA15
BC557A
ICA11
TMP47C432N8895
or TMP47C432N8896
TO LED BOARD
TO MAIN BOARD
MA05
PA05
MA04
PA04
PA01A
PA01
PA02A
PA02
PA03A
PA03
H.SYNC
-30V
P.B. RESET
AFT-1
AFT-2
+33V
VT
BV/BU
SW
MUTE
VOL.
BRT.
COL.
AV
STB
CZ01 2200 × 4
CZ02 2200 × 4
CZ03 1000 × 4
Q482
BC547A
QR62
BC557B
QR71
BC547A
QR72
BC557A
QR41
BC547A
QR42
BC557A
DR10
TLP631GB
PHOTO COUPLER
L161 TRF1019
L107 TRF1411
L108 TRF1457



ICA12
M58653P
ICA13
TD6350P
4MHz
XA02
4MHz X-TAL
XA01
4M
CERA
ICA11
TMP47C432N8895
or TMP47C432N8896
QA14
BC557A
QA15
BC557A
QA16
BC547A
QA17
BC547A
QA18
BC547A
QA19
BC557A
QA20
BC547A
QA21
BC557A
TO LED BOARD
TO MAIN BOARD
MA05
PA05
MA04
PA04
PA01
PA03
H.SYNC
RST
AFT-1
AFT-2
+33V
MUTE
VOL.
BRT
COL.
AV
STB
P.B. RESET
QA01
BC547B
QA05
μPC574JC
or μPC574J
Q482
BC547A
QR62
BC557B
QR71
BC547A
QR72
BC557A
QR41
BC547A
QR42
BC557A
DR10
TLP631GB
PHOTO COUPLER
UK01 I.R. AMP BOARD PW4170
ICK01
μPC1474HA
DK01
BPW41N
QS02
BD202
QS03
BC547B
QS04
BC557B
DS10
BZX79B5V1
DS05~DS08
IN4003 x4
T803
TPW1262B
RMT POWER
TRANS.
ISOLATED
GROUND
D801~D804
TVR4J x4
IC801
SI-8001D
Q803
BC337
DEGAUSS
COIL
MAINS
AC 220V
S801
MAINS SW.

vithout notice.

JCTOR

)0,000.
)acitor values less than 1 are expressed in

luctor values more than 1 are expressed in

d.

RESISTORS

Prefixed to values:

TYPE	MARK
Carbon Comp.	S
Oxide Metal Film	R
Ins. Carbon Film	P
Wire Wound	W
Cement covered W.W.	NO MARK
Fusible Res.	FR

Suffixes to values:

TOLERANCE	MARK
±1%	(F)
±2%	(G)

Suffixes to VR values:

LAW	MARK
Linear	(B)
'C' Curve Characteristic	(C)

Rating Markings:

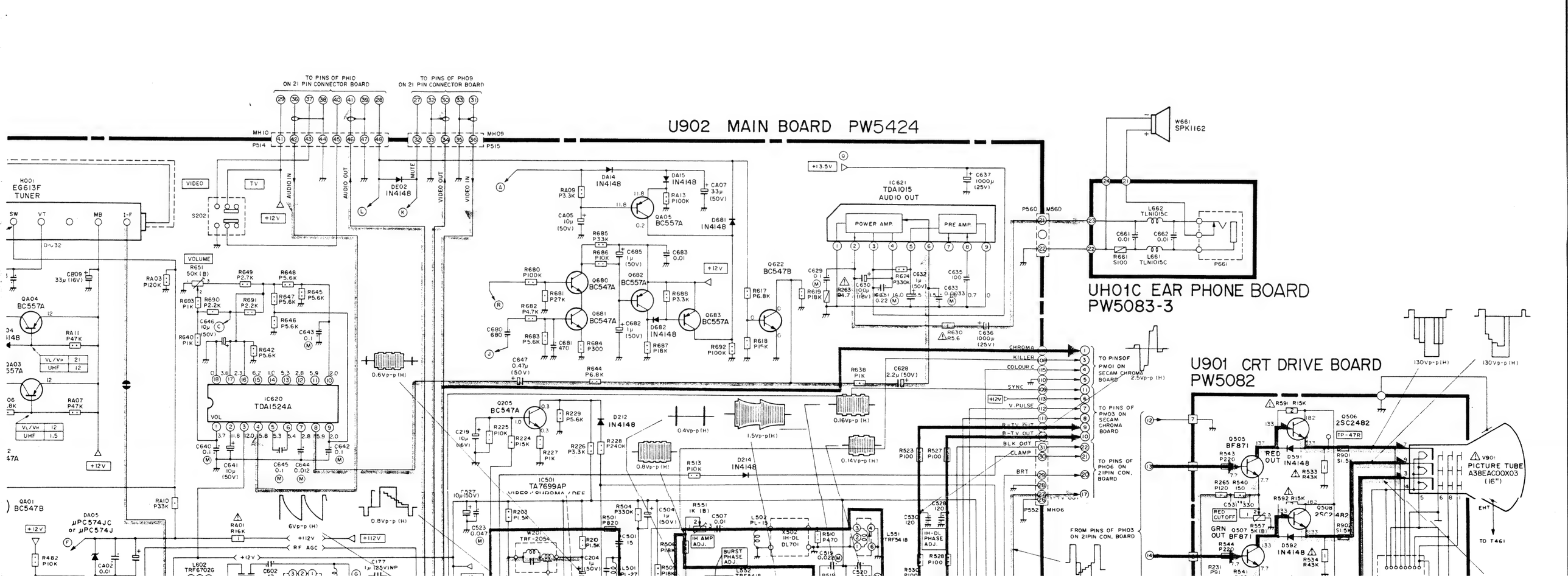
WATTAGE	MARK
1/6W	
1/4W	
1/2W	
1W	1
2W	2

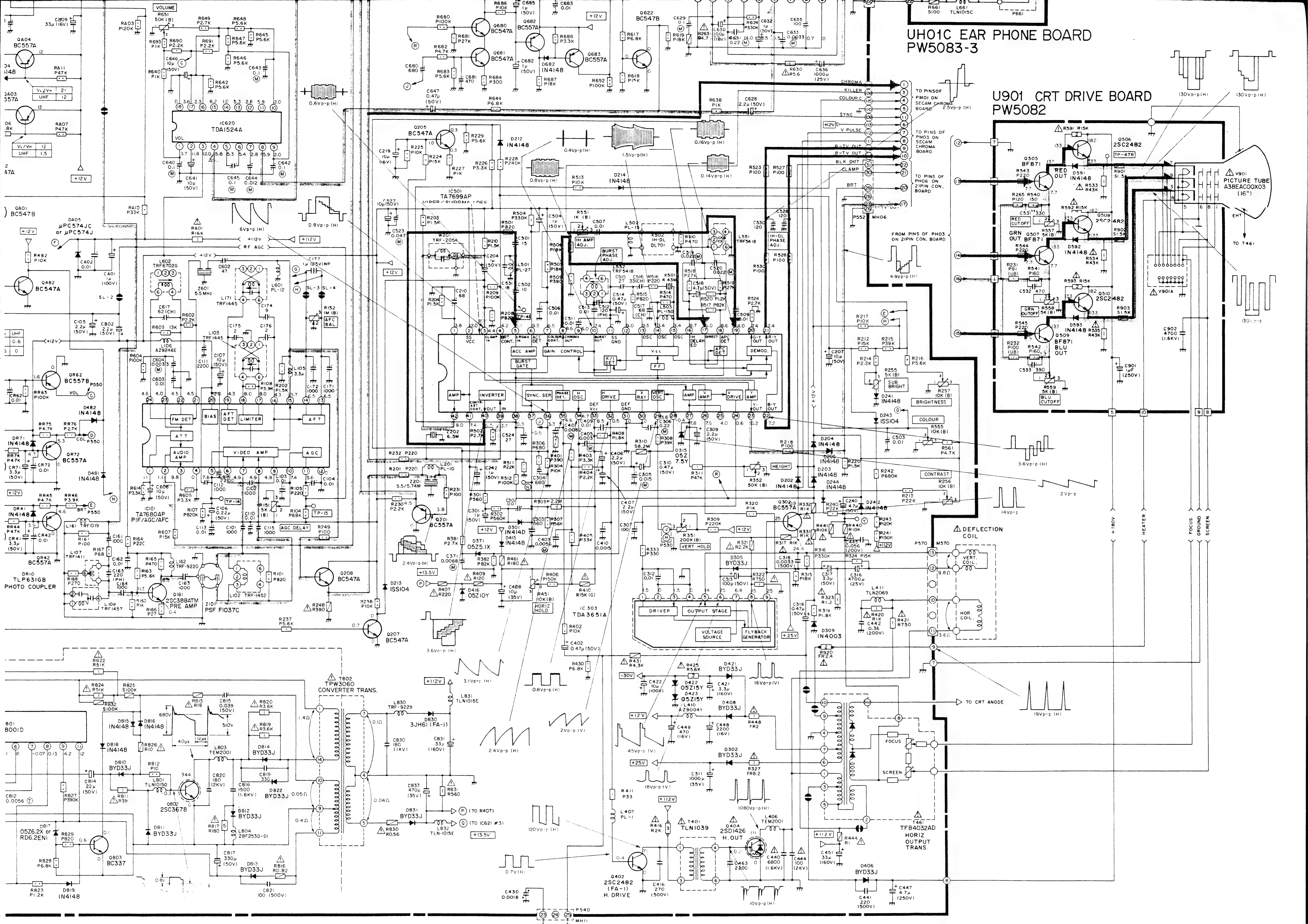
WATTAGE	MARK
3W	3
5W	5
10W	10
15W	15
20W	20
25W	25

CAPACITORS

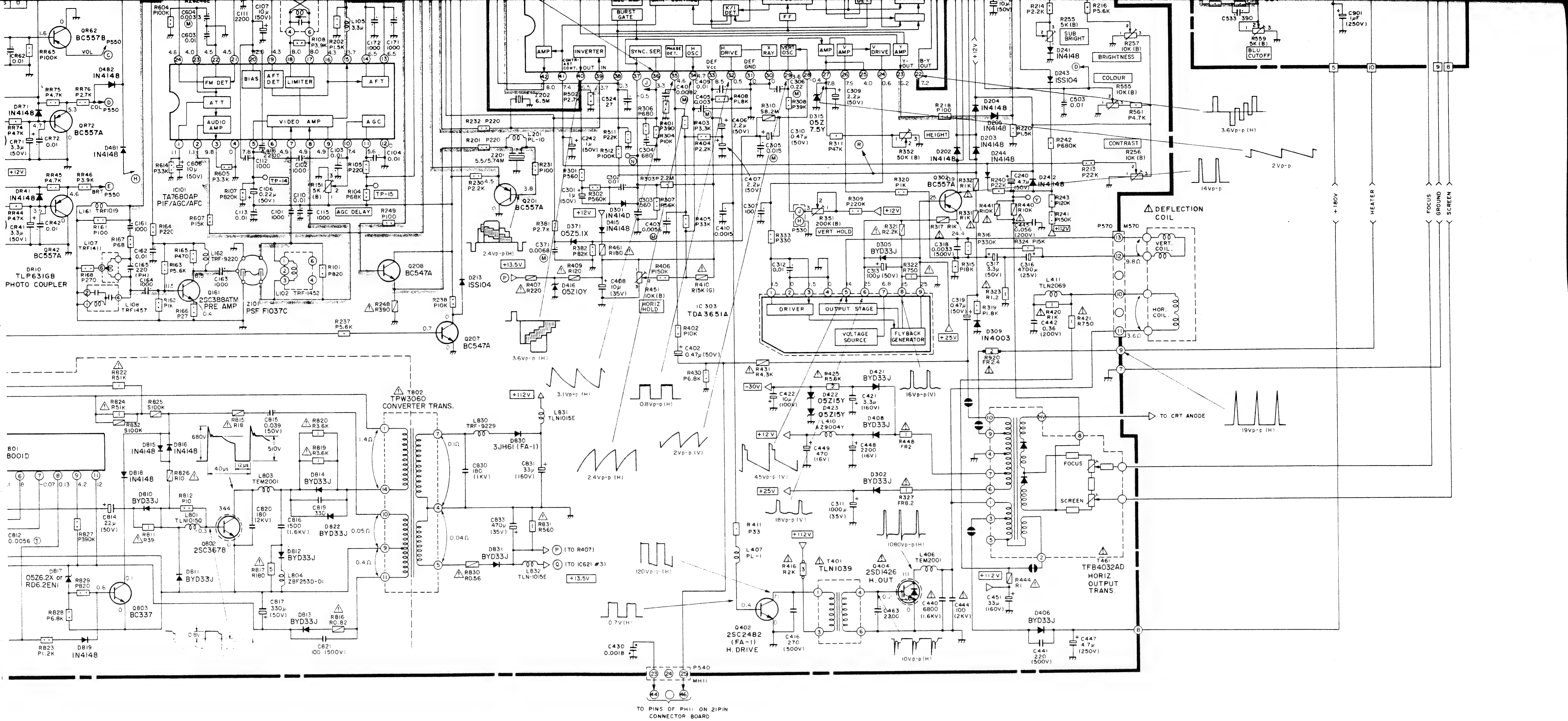
Rating Markings:

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	





UH01C EAR PHONE BOARD
PW5083-3
U901 CRT DRIVE BOARD
PW5082
IC620 TDA1524A
IC501 TA7699AP
IC101 TA7680AP PIF/AGC/AFC
IC303 TDA3651A
T802 TPW3060 CONVERTER TRANS.
T461 TFB4032AD HORIZ OUTPUT TRANS.
V901 PICTURE TUBE A38EAC00X03 (16")
DEFLECTION COIL
TO CRT ANODE


IC101
TA7680AP
PIF/AGC/AFC
FM DET
ATT
AUDIO AMP
BIAS
AFT DET
LIMITER
AFT
VIDEO AMP
AGC
AGC DELAY
TP-14
TP-15
Z101
PSF F1037C
Q161
2SC388ATM
PRE AMP
L102 TRF-1452
L162 TRF-9220
DR10
TLP631GB
PHOTO COUPLER
QR62
BC557B
QR72
BC557A
QR42
BC557A
VOL
COL
BRT
Q201
BC557A
Q208
BC547A
Q207
BC547A
AMP
INVERTER
SYNC. SEP.
PHASE DET.
H OSC
H DRIVE
X RAY
VERT OSC
V AMP
V DRIVE
Y AMP
BURST GATE
FF
CONTRAST CONT.
DEF Vcc
DEF GND
Y-OUT
B-Y OUT
SUB BRIGHT
BRIGHTNESS
COLOUR
CONTRAST
HEIGHT
VERT HOLD
HORIZ HOLD
BLU CUTOFF
IC 303
TDA3651A
DRIVER
OUTPUT STAGE
VOLTAGE SOURCE
FLYBACK GENERATOR
Q302
BC557A
DEFLECTION COIL
VERT. COIL
HOR. COIL
T802
TPW3060
CONVERTER TRANS.
Q802
2SC3678
Q803
BC337
T401
TLN1039
Q402
2SC2482
(FA-1)
H. DRIVE
Q404
2SD1426
H. OUT
T461
TFB4032AD
HORIZ OUTPUT TRANS.
TO CRT ANODE
FOCUS
SCREEN
+180V
HEATER
FOCUS
GROUND
SCREEN
P540
MH11
TO PINS OF PH11 ON 21PIN CONNECTOR BOARD

2

160F5WD

SCHEMATIC DIAGRAM (2/2)

IMPORTANT SAFETY NOTICE

Component marked with the International Hazard Symbol must, if changed, be replaced by an approved type and must be mounted as the original. This will ensure that the safety standards adhered to during manufacture will be maintained following any servicing procedure.

OBSERVATION OF VOLTAGES AND WAVEFORMS

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5. The waveforms were taken using a standard colour bar signal and were observed using a wide band oscilloscope via a low capacity probe.
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NOTES:

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EXPRESSION

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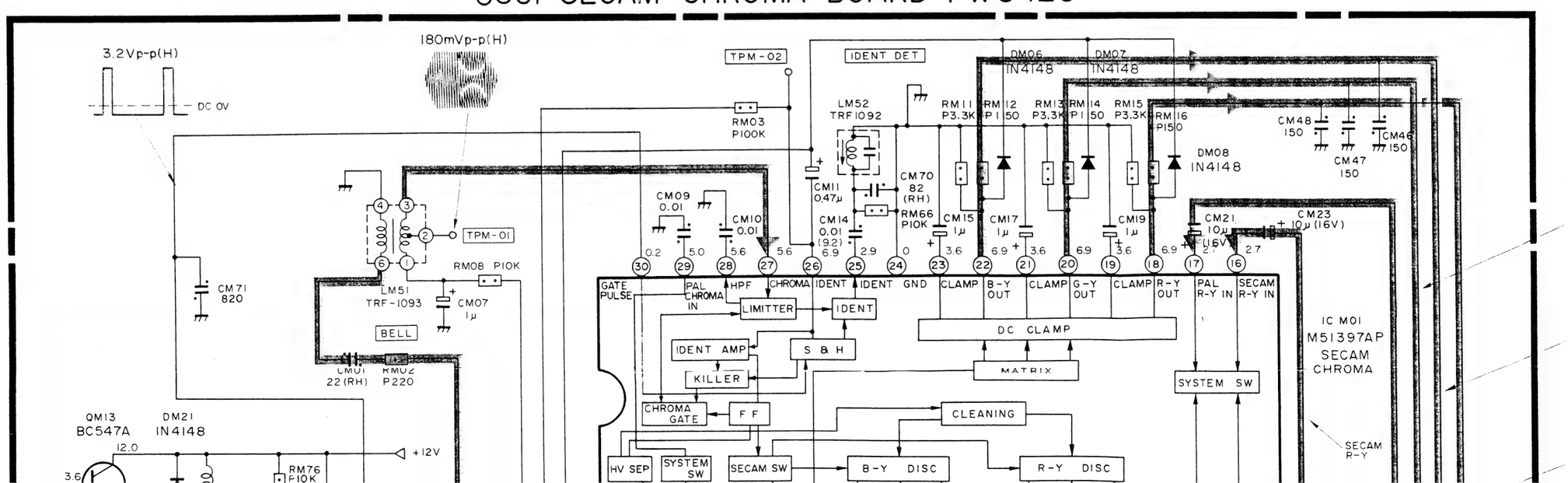
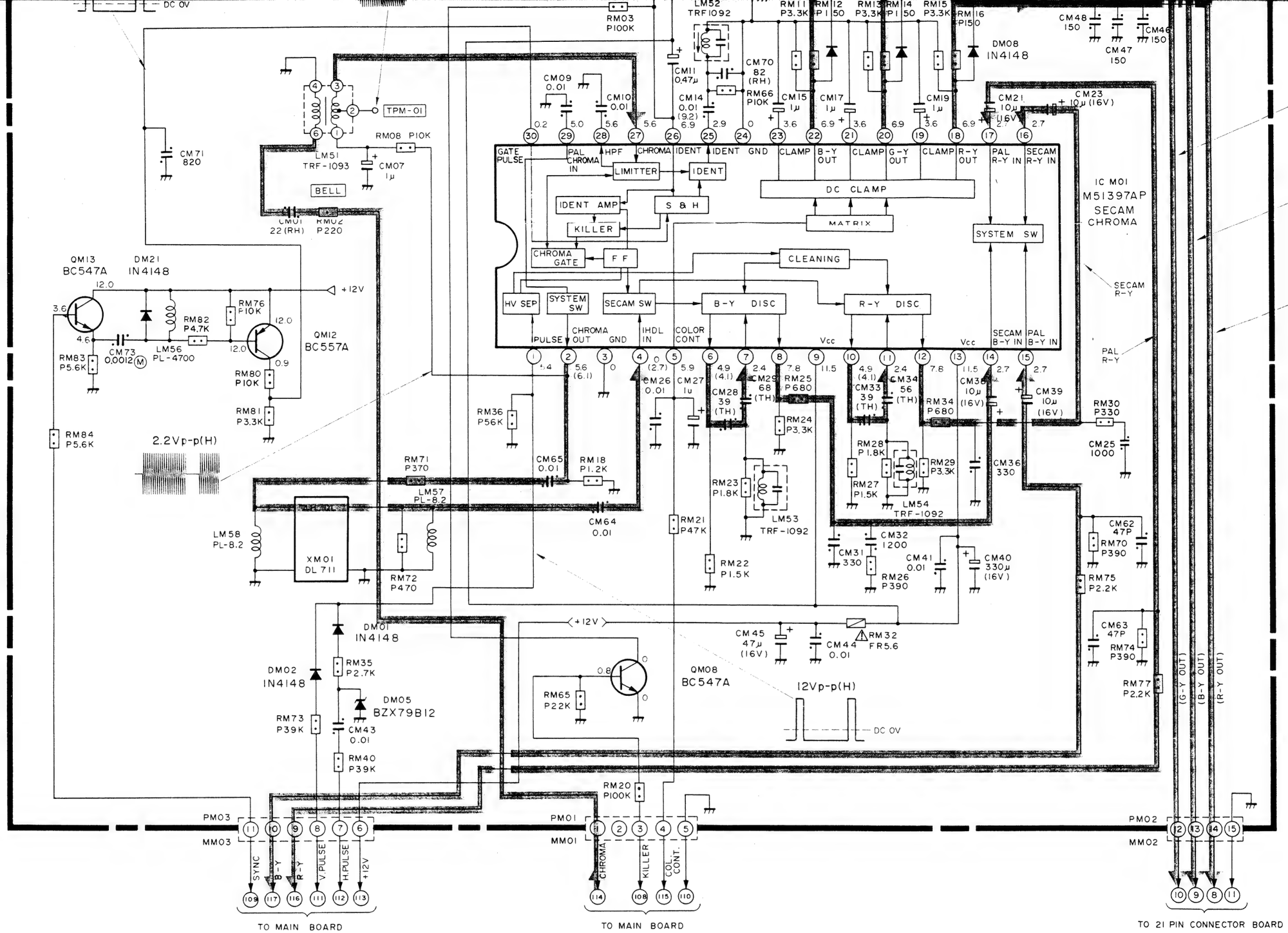
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expr
   µF and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expr
   µH, and the values less than 1 in H.

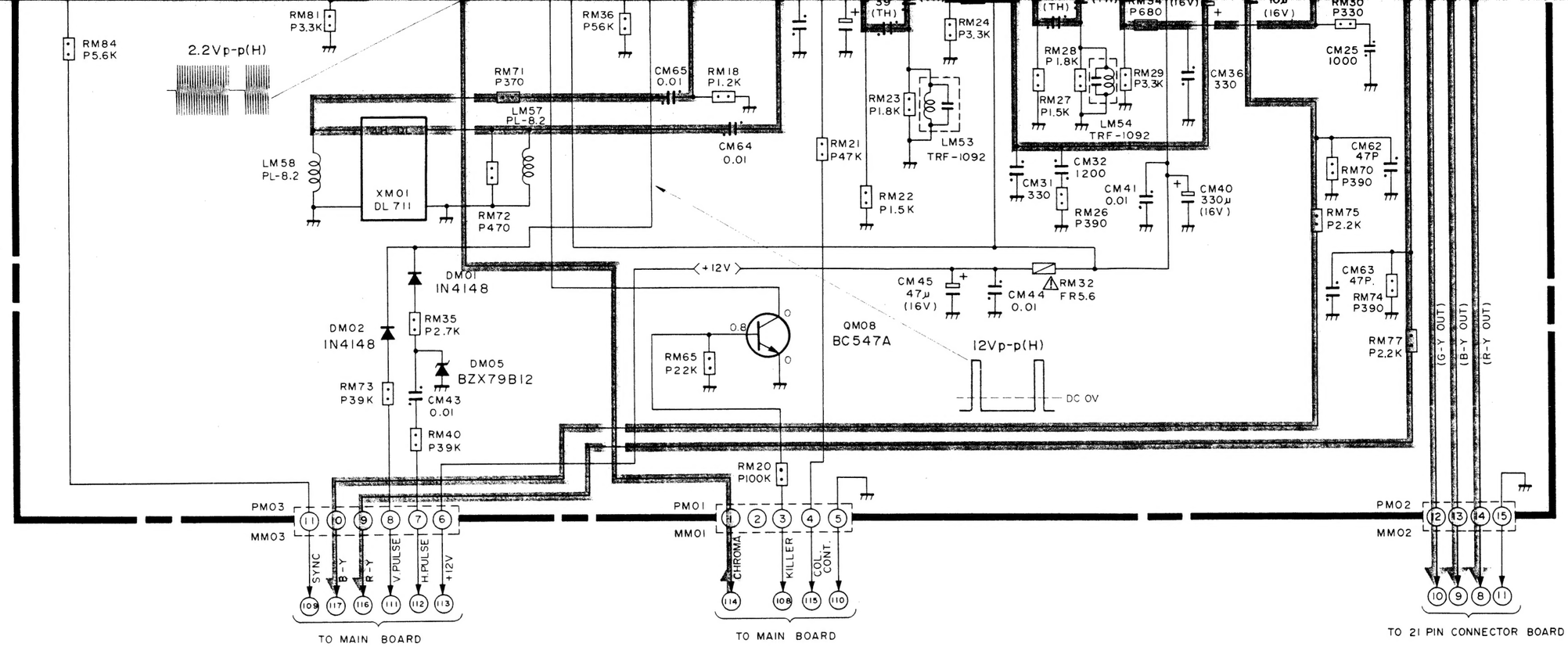
GROUNDING SYMBOL

1. ⊥: Non isolated ground, ⏚ : Isolated ground.

U501 SECAM CHROMA BOARD PW5425




DC 0V
RM03 P100K
LM52 TRF1092
RM11 P3.3K
RM12 P150
RM13 P3.3K
RM14 P150
RM15 P3.3K
RM16 P150
DM08 IN4148
CM48 150
CM46 150
CM47 150
CM09 0.01
CM10 0.01
CM11 0.47µ
CM70 82 (RH)
CM14 0.01 (9.2)
RM66 P10K
CM15 1µ
CM17 1µ
CM19 1µ
CM21 10µ (16V)
CM23 10µ (16V)
TPM-01
RM08 P10K
CM71 820
LM51 TRF-1093
CM07 1µ
BELL
CM01 22 (RH)
RM02 P220
GATE PULSE
PAL CHROMA IN
HPF
CHROMA
IDENT
IDENT
GND
CLAMP
B-Y OUT
CLAMP
G-Y OUT
CLAMP
R-Y OUT
PAL R-Y IN
SECAM R-Y IN
LIMITTER
IDENT
DC CLAMP
IDENT AMP
S & H
MATRIX
KILLER
SYSTEM SW
CHROMA GATE
F F
CLEANING
IC M01
M51397AP
SECAM
CHROMA
HV SEP
SYSTEM SW
SECAM SW
B-Y DISC
R-Y DISC
SECAM R-Y
PULSE
CHROMA OUT
GND
IHDL IN
COLOR CONT
Vcc
Vcc
SECAM B-Y IN
PAL B-Y IN
PAL R-Y
QM13 BC547A
DM21 IN4148
+12V
RM76 P10K
RM82 P4.7K
RM83 P5.6K
CM73 0.0012 (M)
LM56 PL-4700
QM12 BC557A
RM80 P10K
RM81 P3.3K
RM84 P5.6K
2.2Vp-p(H)
RM36 P56K
CM65 0.01
RM18 P1.2K
RM71 P370
LM57 PL-8.2
CM64 0.01
CM26 0.01
CM27 1u
CM28 39 (TH)
CM29 68 (TH)
RM25 P680
RM24 P3.3K
CM33 39 (TH)
CM34 56 (TH)
RM34 P680
CM36 10µ (16V)
CM39 10µ (16V)
RM30 P330
CM25 1000
RM28 P1.8K
RM27 P1.5K
RM29 P3.3K
LM54 TRF-1092
CM36 330
RM23 P1.8K
LM53 TRF-1092
RM21 P47K
RM22 P1.5K
CM31 330
CM32 1200
CM41 0.01
RM26 P390
CM40 330µ (16V)
CM62 47P
RM70 P390
RM75 P2.2K
LM58 PL-8.2
XM01 DL 711
RM72 P470
DM01 IN4148
DM02 IN4148
RM35 P2.7K
DM05 BZX79B12
RM73 P39K
CM43 0.01
RM40 P39K
+12V
CM45 47µ (16V)
CM44 0.01
RM32 FR5.6
QM08 BC547A
RM65 P22K
12Vp-p(H)
DC 0V
CM63 47P
RM74 P390
RM77 P2.2K
(G-Y OUT)
(B-Y OUT)
(R-Y OUT)
RM20 P100K
PM03
MM03
SYNC
B-Y
R-Y
V.PULSE
H.PULSE
+12V
TO MAIN BOARD
PM01
MM01
CHROMA
KILLER
COL. CONT.
TO MAIN BOARD
PM02
MM02
TO 21 PIN CONNECTOR BOARD


RM84 P5.6K
2.2Vp-p(H)
RM81 P3.3K
RM36 P56K
RM71 P370
LM57 PL-8.2
CM65 0.01
RM18 P1.2K
CM64 0.01
LM58 PL-8.2
XM01 DL 711
RM72 P470
RM21 P47K
RM22 P1.5K
RM24 P3.3K
RM23 P1.8K
LM53 TRF-1092
RM28 P1.8K
RM27 P1.5K
LM54 TRF-1092
RM29 P3.3K
CM36 330
CM31 330
CM32 1200
RM26 P390
CM41 0.01
CM40 330µ (16V)
RM30 P330
CM25 1000
CM62 47P
RM70 P390
RM75 P2.2K
CM63 47P.
RM74 P390
RM77 P2.2K
(G-Y OUT)
(B-Y OUT)
(R-Y OUT)
DM01 IN4148
DM02 IN4148
RM35 P2.7K
DM05 BZX79B12
RM73 P39K
CM43 0.01
RM40 P39K
+12V
CM45 47µ (16V)
CM44 0.01
RM32 FR5.6
QM08 BC547A
RM65 P22K
12Vp-p(H)
DC 0V
RM20 P100K
PM03
MM03
PM01
MM01
PM02
MM02
SYNC
B-Y
R-Y
V.PULSE
H.PULSE
+12V
CHROMA
KILLER
COL. CONT.
TO MAIN BOARD
TO MAIN BOARD
TO 21 PIN CONNECTOR BOARD

ice.

ies less than 1 are expressed in

es more than 1 are expressed in

RESISTORS

Prefixed to values:

TYPE	MARK
Carbon Comp.	S
Oxide Metal Film	R
Ins. Carbon Film	P
Wire Wound	W
Cement covered W.W.	NO MARK
Fusible Res.	FR

Suffixes to values:

TOLERANCE	MARK
±1%	(F)
±2%	(G)

Suffixes to VR values:

LAW	MARK
Linear	(B)
'C' Curve Characteristic	(C)

Rating Markings:

WATTAGE	MARK
1/6W	
1/4W	
1/2W	
1W	1
2W	2

WATTAGE	MARK
3W	3
5W	5
10W	10
15W	15
20W	20
25W	25

CAPACITORS

Rating Markings:

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

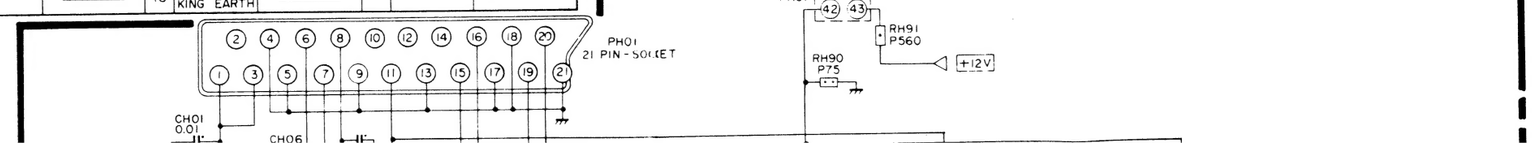
21 PIN SOCKET IN/OUT SIGNAL

PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS
1	AUDIO OUT(R)	0.2 ~ 2Vrms	7	BLUE IN	0.7Vpp ± 3dB	13	RED EARTH	———	19	VIDEO OUT	1Vp-p ± 3dB
2	AUDIO IN(R)	0.2 ~ 2Vrms	8	EXT/TV	TV : 0-2V EXT: 9.5-12V	14	NC	———	20	VIDEO IN	1Vp-p ± 3dB
3	AUDIO OUT(L)	0.2 ~ 2Vrms	9	GREEN EARTH	———	15	RED IN	0.7Vpp ± 3dB	21	SHIELD EARTH	———
4	AUDIO EARTH	———	10	NC	———	16	RAPID BLANKING	0 0-0.4V 1 1-3.0V			
5	BLUE EARTH	———	11	GREEN IN	0.7Vpp ± 3dB	17	VIDEO EARTH	———			
6	AUDIO IN(L)	0.2 ~ 2Vrms	12	NC	———	18	RAPID BLANKING EARTH	———			

NOTE : Red. Green and Blue relative difference should be within ± 0.5dB

G

UH01A 21 PIN CONNECTOR BOARD PW5083-1

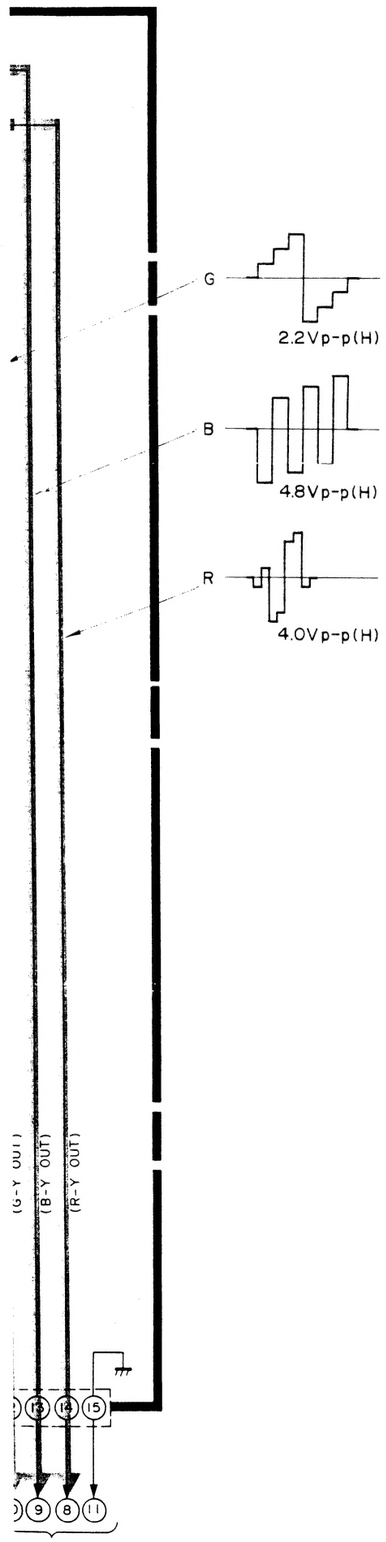


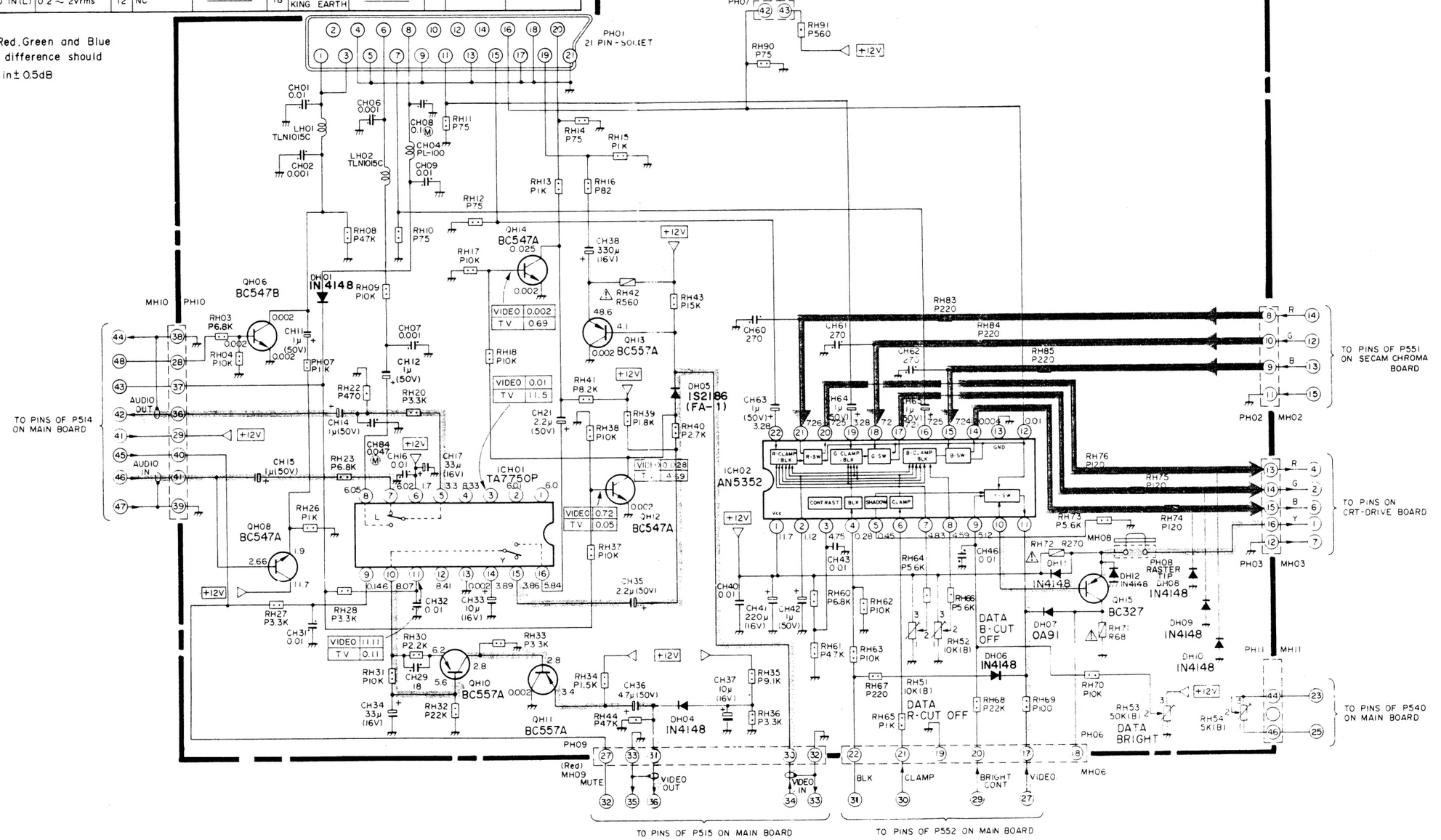
21 PIN SOCKET IN/OUT SIGNAL

PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS	PIN	SIGNAL	SPECIFICATIONS
1	AUDIO OUT(R)	0.2 ~ 2Vrms	7	BLUE IN	0.7Vpp ± 3dB	13	RED EARTH	———	19	VIDEO OUT	1Vp-p ± 3dB
2	AUDIO IN(R)	0.2 ~ 2Vrms	8	EXT/TV	TV : 0-2V EXT : 9.5-12V	14	NC	———	20	VIDEO IN	1Vp-p ± 3dB
3	AUDIO OUT(L)	0.2 ~ 2Vrms	9	GREEN EARTH	———	15	RED IN	0.7Vpp ± 3dB	21	SHIELD EARTH	———
4	AUDIO EARTH	———	10	NC	———	16	RAPID BLANKING	0 0-0.4V 1 1-3.0V			
5	BLUE EARTH	———	11	GREEN IN	0.7Vpp ± 3dB	17	VIDEO EARTH	———			
6	AUDIO IN(L)	0.2 ~ 2Vrms	12	NC	———	18	RAPID BLANKING EARTH	———			

NOTE : Red, Green and Blue relative difference should be within ± 0.5dB

UH01A 21 PIN CONNECTOR BOARD PW5083-1





B

4.8Vp-p(H)

R

4.0Vp-p(H)

(G-Y OUT)

(B-Y OUT)

(R-Y OUT)

N CONNECTOR BOARD

TO PINS OF P514 ON MAIN BOARD

TO PINS OF P515 ON MAIN BOARD

TO PINS OF P552 ON MAIN BOARD

TO PINS OF P551 ON SECAM CHROMA BOARD

TO PINS ON CRT-DRIVE BOARD

TO PINS OF P540 ON MAIN BOARD

4

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